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Vol. 114, No. 20 Thursday, May 14, 1942 Price Ten Cents

Asks Bids for 93,650,000 Pounds of Paper

Proposals Will Be Opened May 25 For Supplying the Government Printing Office For the Six Months Period Beginning July 1 — Joint Congressional Committee Will Meet June 3 To Make Awards.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 13, 1942—The Joint Congressional Committee on Printing has announced that it will open bids on May 25 for 93,650,000 pounds of paper for the use of the Government Printing Office for a six months period beginning July 1. This is the first time for some months that bids have been opened for a six months period. The openings have been for a three months period for some time. At the last opening bids were received for a three months period for 53,400,000 pounds. The committee will meet on June 3 for making awards.

Papers and Quantities Wanted

Quantities asked for include the following:

3,500,000 pounds newsprint paper.
200,000 pounds telephone book news.
6,400,000 pounds machine-finish book paper.
600,000 pounds antique book paper.
4,300,000 pounds off-set book paper.
120,000 pounds lightweight machine-finish book paper.
280,000 pounds 50% antique book paper.
30,000 pounds 75% laid antique book paper.
4,000,000 pounds supercalendered book paper.
5,000,000 pounds machine-coated book paper.
1,000,000 pounds coated book paper.
80,000 pounds lithograph paper.
5,250,000 pounds mimeograph paper.
600,000 pounds U S M O safety writing paper.
8,000 pounds U S M O writing paper.
20,000,000 pounds writing paper.
3,200,000 pounds map paper.
3,410,000 pounds manifold paper.
12,889,000 pounds bond paper.
1,392,000 pounds ledger paper.
2,430,000 pounds index paper.
1,140,000 pounds cover paper.
760,000 pounds manila paper.
1,600,000 pounds kraft paper.
1,000,000 sheets gummed paper.
480,000 pounds blotting paper.
30,000 pounds high finish red sulphite.
500,000 pounds manila tag board.
1,700,000 pounds calendered tag board.
100,000 pounds manila cardboard.
410,000 sheets railroad board.
850,000 pounds bristol board.
9,000,000 pounds postal card bristol.
80,000 sheets pressboard.
1,500,000 pounds news board.
1,280,000 pounds binder's board.

In cases where more than 1,000 reams are called for, proposals will be received for 1,000 reams or more.

Report of Specifications Committee

Following is the report of the Paper Specifications Committee to the Joint Congressional Committee on Printing.

25 Per Cent Rag Bond.—Lots 109, 111, 112, 116, 117, and 118 were eliminated. The use of 48-pound paper was discontinued. Lots 110, 113, 114, and 115 were renumbered 109, 110, 111, and 112 respectively.

50 Per Cent Rag Bond.—Lot 122 was eliminated. Lots 123 and 124 were renumbered 122 and 123 respectively. The use of 48-pound paper was discontinued.

75 Per Cent Rag Bond.—The use of 48-pound paper was discontinued.

Sulphite Ledger.—The use of 56- and 80-substance sulphite ledger was eliminated. Lot No. 152 was eliminated since 80-pound paper of this grade is no longer needed.

25 Per Cent Rag Ledger.—The use of 72-pound paper was discontinued. Lot No 156 was eliminated and Lot No. 157 was renumbered 156.

50 Per Cent Rag Ledger.—Lots 162, 163, and 165 were eliminated since the use of substance 72, 80, and 88 of this grade of paper was discontinued. Lot No. 164 was renumbered 162.

75 Per Cent Rag Ledger.—Lots 170, 171, and 173 were eliminated since the use of substance 72, 80, and 88 of this grade of paper was discontinued. Lot No. 172 was renumbered 170.

100 Per Cent Rag Ledger.—Lots 177, 179, 180, and 181 were eliminated. Lot 178 was renumbered

(Continued on page 22)

Government Adopts Drastic Price Control

General Maximum Price Regulation and Supplementary Measures In Effect May 15 Establish Ceiling Prices On Most Commodities And Services—Many Grades of Paper and Its Products Included.

A closely controlled national economy was inaugurated May 11, 1942, by the issuance of the General Maximum Price Regulation by Leon Henderson, Price Administrator. In his announcement, Mr. Henderson said in part: "The inflationary rise in the cost of living has been gathering momentum. A staggering excess of money over the supplies of goods available threatens disaster to the civilian economy and to the war effort. Left unchecked, the cost of living fast would become prohibitive for persons of fixed income, while unwarranted suffering would be reflected on growing thousands of families whose principal support comes from men serving with the armed forces. Left to themselves, rising prices, wages, and costs would chase each other upward in an endless spiral. The inevitable result would be inflation, a defeat on the home front that could not fail to be reflected on the battlefields abroad."

Regulation Essentially a War Measure

The following excerpts from the Regulation issued by the Office of Price Administration indicate the great importance, scope and some of the more important provisions and requirements of this law.

The General Maximum Price Regulation is strictly a wartime measure. It will apply for the "duration" and be abandoned as soon as possible after peace comes. General price control means a guarantee to the American people that their costs of living will remain stable. It means that the buying power of wages and salaries will not be impaired. It means that the producers of goods can be assured of stable costs, costs which are in turn the prices of other products. It means that your government can plan its war program without the confusion and difficulties that attend constantly increasing prices and costs for the vital machines and products needed to defeat the enemy.

It means that the savings and earnings of our citizens, loaned to their government to finance the war effort, will be returned in currency that has dollar for dollar purchasing power with that now saved. It means that scarce goods will not go solely to those who have the most money, but that all the people, rich and poor alike, will have an equal chance to obtain their share at a fair price.

Prices To Go No Higher

Prices under the ceiling are going no higher. The retail price will be held. There will be no increase in the general level. Retailers whose ceiling prices are not adequate to cover the cost of replacing merchandise because wholesale prices have advanced, must expect and receive relief from suppliers.

If wholesalers and manufacturers do not readjust their prices downward voluntarily in these cases, the Office of Price Administration will take action under the law to insure that each class of seller receives a fair share of returns from the retail sale of any commodity. Price adjustments will be considered only in cases where individual sellers suffer hardship because their prices for special reasons are out of line with those of their competitors. These special situations will be handled by machinery which is now being set up as rapidly as possible. This, as every one will recognize, is an enormous task and sellers are asked to remember that "patience itself is good patriotism."

Higher Than Ceiling Prices Prohibited

Section 1 of the Regulation states that no person shall sell or deliver any commodity, and no person shall sell or supply any service, at a price higher than the maximum price permitted by the Regulation; and no person in the course of trade or business shall buy or receive any commodity or service at a price higher than the maximum price permitted by this Regulation.

Except as otherwise provided, the sellers' maximum price for any commodity or service shall be: (a) In those cases in which the seller dealt in the same or similar commodities or services during March, 1942: the highest price charged by the seller during such month, for the same commodity or service; or if no charge was made for the same commodity or service, for the similar commodity or service most nearly like it; or in those cases in which the seller did not deal in the same or similar commodities or services during March, 1942; the highest price charged during such month by the most closely competitive seller of the same class.

Supplementary Regulations for Paper

Section 4 of the Regulation states: If the maximum prices established for any commodity under the provisions of the Regulation fail equitably to distribute returns from the sale at retail of such commodity among producers, manufacturers, wholesalers and retailers, the Price Administrator will by supplementary regulation establish such maximum prices for different classes of sellers, or fix such maximum prices as will insure that such class of sellers shall receive a fair share of such return.

Supplementary Price Regulation No. 129, becoming effective May 11, 1942, is one of the regulations referred to in Section 4. It includes practically all of the major types of paper. Supplementary Price Regulation No. 130 covers only the newsprint grades of paper.

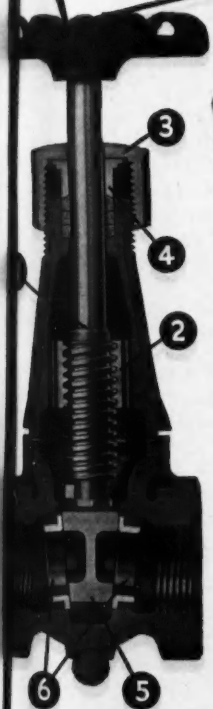
The General Maximum Price Regulation will directly affect the lives of every American, and it is strongly urged that every person should carefully read Bulletin No. 1 issued by the Office of Price Administration, Washington, D. C. This text clearly and comprehensively presents all the provisions of the General Maximum Price Regulation and provides a statement of considerations involved in the issuance of this all-inclusive measure to eliminate the danger of inflation.

SAVE BRONZE by SUBSTITUTION

WHERE PRACTICAL, SPECIFY IRON BODY BRONZE MOUNTED SADDLE GATE VALVES ...IN PLACE OF BRONZE VALVES

Users of valves can help themselves as well as the war effort by substitution. The Walworth Figure 709 Bronze Mounted Iron Body Valve, for example, is made largely of iron. The seats and discs are of bronze, affording bronze-to-bronze contact. A bronze bushing cast in the bonnet provides bronze-to-bronze contact for the stem threads. Stuffing nut and gland are also of bronze, but the rest of the valve parts are iron. This Walworth Saddle Gate Valve can be used for many services where bronze valves have heretofore been specified. This valve is easy to take apart, clean, and put together.

Let's all cooperate by intelligent substitution, using less of the scarce metals wherever possible and prolonging the life of all valves by proper servicing at regular intervals.



● Stems are of high tensile strength wrought bronze. Stem threads have bronze-to-bronze contact with bushing.

● Bushing is bronze and is made with drainage holes. Bushing is cast in the iron bonnet.

● Bronze stuffing nut is rugged and of hexagonal construction for easy tightening.

● Gland is wrought brass and can be lifted easily by means of a screw driver inserted under the shoulder.

● Solid wedge-type disc is bronze, of slip-on, lock-on construction.

● Bronze seat rings afford bronze-to-bronze contact with disc.

BUT THE REST OF THE VALVE IS IRON!

WALWORTH 1842 1942 VALVES AND FITTINGS 100TH ANNIVERSARY

A century ago Walworth first manufactured valves and fittings. Walworth has been manufacturing valves and fittings continuously ever since.

WALWORTH

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60 EAST 42nd STREET, NEW YORK

VALVES FITTINGS and TOOLS
Backed by 100 Years' Service

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

Dollar Parity With Canada May Be Adopted

Outlook of Newsprint Companies Becomes More Uncertain As Subject of Elimination of Premium On Exchange Is Reported To Be Under Consideration—Tax Assistance To Several Paper Concerns.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 11, 1942—The report here that "dollar parity" is now a subject of consideration between Canada and the United States has added to the uncertainties regarding the outlook of the newsprint companies, for the premium on exchange in connection with the sale of newsprint to the United States has been an important source of revenue to Canadian producers. The report arises because of Canada's acceptance of tripartite membership in the Munitions Assignment Board at Washington. It is expected to result in a new formula whereby Canada will pool its production of finished munitions for allocation wherever needed, and as a means to this end will be assured sufficient U. S. dollars to meet the cost of war materials purchased in the United States. This, it is said, involves a decision as to whether or not the Canadian dollar is to be returned to parity with the U. S. dollar. Other bearish factors in the outlook of the newsprint companies are the questions of price and power. The companies had been relying on the price increase scheduled to go into effect the second quarter of this year to offset the mounting costs of production, and although this increase has been deferred for the time being by the decision of the authorities "freezing" the price in the United States, they are hopeful of a ruling that this will not apply to imported newsprint. In regard to power, while this is not an immediate problem there is a possibility of some rationing later in the year, in which case it is probable that adjustments will be made so that companies affected may be compensated by other companies which operate at capacity. Still other factors are questions about supplies of various kinds and the declining trends in newsprint usage. The net result of all this is continued pressure on newsprint securities on the Stock Exchange, with the market having to absorb considerable nervous holdings of the paper stocks.

Tax Aid to Paper Firms

The federal government has effected agreements with two paper companies giving special tax assistance to them to enable them to increase their trade with the United States and thus provide foreign exchange.

The companies are Canada Paper Company of Montreal, Alliance Paper Mills Limited of Merritton, Ont.

Plan Improvements

Canada Paper Company plans a $188,000 plant extension to be devoted mainly to export trade which will maintain a business providing $335,250 in United States funds annually.

The Alliance mill proposes a $300,000 extension to a sulphide mill at Merritton expected to provide $211,000 annually in United States trade.

The companies will be granted special depreciation allowances in computing taxes.

Forests Made "Protected Areas"

The New Brunswick Government has announced that, beginning May 1 and continuing until November 1, all forest land in New Brunswick is set aside as a "protected area."

Strictly Regulated

Under this regulation, only by forest travel may persons enter any forest land area for traveling, camping, fishing, hunting, pioneering, or any other purpose. Exceptions are made in the case of wardens, licensees, owners, or occupiers of the forest lands traveled upon, etc.

Big Pulpwood Program

From Saint John, N. B., it is announced that between 75,000 and 80,000 cords of pulpwood will be brought down the Saint John River this summer for use at the plant of Port Royal Pulp and Paper Company in Saint John, and will be one of the largest drives yet handled by the company.

The cut will produce a long run for the mill.

Tribute to Charles R. Whitehead

Touching on the appointment of Charles R. Whitehead, vice-president of the Consolidated Paper Corporation, to the board of directors of the company, the *Financial Times* of Montreal says the whole pulp and paper industry has heard of the appointment with pleasure. It continues: "For many years Mr. Whitehead has been an outstanding figure in the industry due to the fact that he built up the Wayagamack Pulp and Paper Company, which became the largest kraft paper mill in Canada, and later on also operated newsprint machines. Wayagamack was always known for the high quality of its products, and in going into the Consolidated merger Mr. Whitehead brought to it one of the most important units. Since that time he has been closely identified with all the important programs undertaken by Consolidated, and his intimate knowledge of the inside workings has been of tremendous help to him in co-operating with the many customers of the company both in Canada and the United States. Long known as one of the most constructive leaders in the province, Mr. Whitehead's early undertakings were in the cotton industry. According to some of his associates he was the head of a small cotton mill at the age of nineteen. Previous to this, members of the Whitehead family have been pioneers in the cotton industry. When he tackled a new undertaking like Wayagamack he built around it one of the most successful organizations known in Canada, both from the standpoint of its inside operations at the mill and the sales staff gradually established in practically every country in the world. Although an indefatigable worker, Mr. Whitehead always found time to keep in touch with the men at the plants, and went a long way towards establishing a very close relationship between labour and capital."

Safety's A GOOD IDEA

. . . but it CAN be overdone!

YES, even a good thing like Safety can be overdone. In fact it is being overdone in many plants today . . . overdone wherever standard thickness pipe is used for services that could be handled, easily, with a big margin of safety, by Taylor Spiral Pipe.

Actually the consideration in selecting standard pipe for such services could hardly be safety, or structural strength, or service life; for light wall, but rugged, Taylor Spiral Pipe offers all these in abundance. The explanation is found, more likely, in that time-honored custom of just ordering "pipe"—meaning standard thickness pipe — for almost every ordinary service.

This habit of considering standard pipe as the starting point on the scale of thicknesses available, costs American industry a lot of money — for in many cases the *installed* cost of Taylor Spiral Pipe is no more than half that of the pipe it could replace.

USE TAYLOR SPIRAL PIPE FOR:

- High and Low Pressure Water Lines.
- Low Pressure Steam and Air Lines.
- Steam and Diesel Exhaust Lines.
- Vacuum and Suction Lines.
- Blower Piping.
- Sand and Gravel Lines.
- Industrial Gas Lines.
- Oil and Gas Gathering Lines.
- Swing Pipe.
- Spray Pond Piping.
- Hydraulic Mining.
- Dredge Lines.

Some suggested uses for Taylor Spiral are listed opposite. Sizes range from 4" to 42"; thicknesses from 18 gauge to 6 gauge; joint lengths up to 40 ft. All types of end joints and couplings; all kinds of fittings and specials or fabricated assemblies are produced by Taylor Forge, thus assuring complete service and undivided responsibility.

Why not change to *job-selected pipe* on that next job—in other words, why not change to Taylor Spiral? It saves steel and dollars — always important; now vital. Write for Catalog 404.

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TAYLOR *Spiral* PIPE

• Other Taylor Forge Products include: WeldELLS and a complete line of other Seamless Steel Fittings for Pipe Welding; Forged Steel Flanges; Forged Steel Nozzles and Necks for boiler and other pressure vessel outlets; Heavy-wall Electric-Weld and Forge-Weld Pipe; Seamless Rolled Steel Rings; Corrugated Furnaces, and similar forged and rolled steel products.

Canada Newsprint Industry Still Confused

Toronto Reports Action of OPA In Setting Maximum Newsprint Price At $50 A Ton Has Little Helped To Abate Present Confusion —Newsprint Mills May Not Do As Well This Year As In 1941.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., May 11, 1942—According to well informed sources in Toronto the recent action of the Office of Price Administration in the United States in setting the ceiling price schedule for newsprint has not materially helped to dissipate the confusion among the trade. The confusion arises through the fact that the announcement does not specify whether the ceiling prices will apply to all manufacturers across the line or that the $50 a ton for imported newsprint is the maximum price that may be paid.

It is pointed out that some manufacturers south of the border were selling newsprint below the set price for the basic period while other manufacturers were getting more than that price. It is claimed here that it is not quite clear whether the United States producers will have to adjust their prices. Some maintain that the intention of the announcement is to stabilize all domestic newsprint prices at the ceiling price, with the necessary adjustments for freight differentials only. Others take the announcement to mean that all domestic newsprint prices shall revert to the figures obtaining during the basic period of October 1-15, 1941. It is recognized that during that period the majority of newsprint manufacturers were receiving $50 a ton based on delivery in New York City. The dividing of the country into 10 zones, with price allowances for freight suggests to some that the ceiling price means whatever price prevailed during the basic period.

Canadian Situation Reported Confused

With reference to the $3 a ton advance in price asked by Canadian manufacturers to take effect after the first quarter of the year, it is pointed out that while Leon Henderson of the OPA has said that the new ceiling would not preclude further discussions between Canadian manufacturers of newsprint and the OPA, he is also quoted as having said that the OPA would continue its study of the industry's operations during "the first half of this year" to determine whether or not the higher price would be justified during the last half of the year. This is taken by some to mean that the "sixty days' hoist" first announced by the OPA has now been boosted to a full quarter year and Canadian manufacturers will not know where they stand on this year's operations until after the first half of the year has passed. Some are inclined to the belief that the OPA may make some sort of a special order covering Canadian firms, while others think that Canadian manufacturers will come under the new ruling and will have to become reconciled to a maximum of $50 a ton for the duration.

Differences of Opinion Reflected in Canada

These differences of opinion concerning the meaning of the new newsprint ruling are reflected in discussions of the prospects of Canadian newsprint manufacturers for the immediate future. As the situation stands, holders of newsprint stocks are taking a bit of a rap again. Stocks have sunk to the lowest point during the last 18 months, although newsprint bonds have held up quite well. This slump is not all due to the holding up of the $3 increase in price, however, as there are a number of other factors that have been influencing the market for some months. Chief among these are the drop in overseas shipments because of lack of shipping and the decline in advertising patronage which adversely affects newsprint consumption directly. Other factors are the decline in the production of substitute products and the accumulated stocks in the hands of publishers. The threat of a curtailment of power, while not imminent, is conceded to be in the offing, and will affect newsprint earnings. More and more power is going to be needed for the manufacture of aluminum for war purposes and the only way this extra power can be made available is by diverting it from newsprint mills in the areas where the huge new aluminum plants have been erected. The word has been passed around that some of the newsprint mills will have to give up some of their power next winter or perhaps sooner, depending on construction progress at the new aluminum plants. Quebec mills in the Saguenay and St. Maurice and perhaps Ottawa areas will be affected first and to the greatest extent.

Profit Outlook Less Promising

Taking all these considerations into account it would seem fairly evident that Canadian newsprint mills will not do as well this year as they have been doing, especially in 1941. The lowered production will mean higher tonnage costs and lower profits. The recent slump in quotations would indicate that newsprint investors are well aware of these influences, but there are other factors that make the picture a little less gloomy. Most newsprint companies are in a much better financial condition than they have been for some years. Last year was an exceptionally good year and earnings were quite satisfactory, to say the least, in spite of excess profits taxes and what not. Many were able to make substantial write-offs for depreciation and improve their capital position. There is nothing to indicate that newsprint manufacturing companies will not be able to at least meet their debt charges this year as well as take good care of depreciation, and, after all, that is about all investors expect of them.

Fire Damages Waste Paper Plant

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., May 11, 1942—Fire Saturday night at the Max Selig Company, local waste paper plant, caused thousands of dollars in damage. Mr. Selig declined to estimate the loss immediately. Tons of baled paper were burned and two firemen were overcome. Practically all firefighting equipment in the central part of the city answered the alarm.

These 2 Words

MAKE MOTOR-DRIVE *More than* POWER!

Reliance men skilled in Application Engineering start daily on new missions essential to making our great war machine produce more than we ever dreamed was possible. They are answering calls where *motor-drive must be more than power.* These are typical . . . A new tinning process to make our reduced tin supply go three times as far . . . A drive to simplify machine design and insure a top-notch production pace on a hurry-up lot of hundreds of boring mills for producing tank turrets . . . Motors to speed up production of shell-turning lathes . . . A motor-drive for an automatic towing machine that will aid sea-going tugs to handle tows with less strain and reduce chances of losing the tow . . . A hoisting motor for bringing seaplanes to a warship's deck safely in rough seas . . . These and many more like them are engineering jobs done in cooperation with men who *start* their design with the question, *"What can we get the motor to do besides supply power?"* Such as:

Fully-enclosed, Fan-cooled D-c. Reliance Motor

Fully-enclosed, Fan-cooled A-c. Reliance Motor

RELIANCE ELECTRIC & ENGINEERING COMPANY
1088 IVANHOE ROAD • CLEVELAND, OHIO
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DETROIT • GREENVILLE, S.C. • HOUSTON, TEX. • LOS ANGELES
MINNEAPOLIS • NEW YORK • PHILADELPHIA • PITTSBURGH

RELIANCE A-C D-C MOTORS

Paper Men Plan to Attend Safety Meeting

Large Delegations Expected To Represent Paper and Pulp Mills And Converting Plants At Annual Safety Conference On May 15—Convention of Superintendents To Meet June 16-18—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 11, 1942—Executives and foremen of paper and pulp mills and converting plants throughout the Fox River Valley will be represented with large delegations at the fifiteenth annual Fox River Valley and Lake Shore Safety Conference at Manitowoc, Wis., Friday, May 15.

The theme of the conference will be the conservation of men and materials during the war, and many of the speeches will deal with these problems. Sessions will be held at the Manitowoc theater, where registration will start at 8:30 A.M. There will be a general session at 9:30 A. M. Group sessions are scheduled in the afternoon, with one allocated to the pulp and paper industry to discuss its specific problems.

Leading Features on Safety Program

Clarence J. Muth, state director of the national committee for conserving manpower in industries will be on the program at the opening session. Two other speakers are scheduled, H. T. O'Connor, FBI agent in charge of the Milwaukee office, and Lieutenant-Commander R. L. Twyman, district civilian personnel officer. A panel discussion will follow on the subject, "Maintaining Safety Interest in Industry in Wartime." It will be led by John Holzbog, Milwaukee, Wis., president of the Wisconsin Council of Safety.

Industrial executives will have a luncheon at noon, at which the speakers will be Voyta Wrabetz, chairman of the Wisconsin Industrial Commission, Madison, Wis.; W. D. James, president of the Wisconsin Manufacturers Association, Fort Atkinson, Wis., and Mr. Holzbog.

Following the sectional meetings, there will be a lifesaving demonstration at 4:30 P. M. by the United States Coast Guard.

Sessions will close with a banquet at 6:30, with De Loss Walker of Chicago, as the speaker.

Dr. Harlow to Address Chemists

Dr. W. M. Harlow of the New York State College of Forestry, will be the speaker at a meeting of the Northeast Wisconsin section of the American Chemical Society at 8 o'clock Wednesday evening, May 13, in Science hall of Lawrence College, Appleton, Wis. His subject will be "Morphology and Chemistry of the Cell Wall." A dinner will be held in his honor prior to the meeting at the Candle Glow Tearoom.

Dr. Harlow has worked in the fields of wood technology and chemistry, forest chemistry, dendrology, histology of pine needles and the microchemistry of the cell wall.

Money Plan for Superintendents Convention

Wisconsin will be well represented at the annual convention of the American Pulp and Paper Mill Superintendents Association June 16, 17 and 18 at Pantlind hotel, Grand Rapids, Mich. Because of the nearness of the gathering, many Wisconsin members are making plans to be present.

There is especial interest in the invitation extended to top management representatives to attend a maintenance and conservation forum, the program of which will give practical suggestions to keep mills operating despite difficulties in obtaining critical materials, and the impossibility of installing new machinery and equipment. Selective production will be discussed as an alternative to volume output. The session will be a clearing house of information as to how these problems are being solved by member mills.

Wausau Engineering Co.'s Plant Completed

Construction work has been completed on the new plant to be occupied by the Wausau Engineering Company at Wausau, Wis. The building is 66 by 44 feet in size, one-story, and is of brick construction. The new company will build specialized machinery for the paper industry and other purposes. For the present, the plant will be busy entirely on war production, mostly machine tools, and a plan has been worked out to use smaller shops in the vicinity as sub-contractors.

Ralph C. Kaser, who operates a large foundry at Cleveland, Ohio, is president of the company. He plans to spend ten months a year at the Wausau plant, and will be assisted in the management by Charles Mertes, of the Mertes Manufacturing Company at Wausau. Machinery is now being installed, and operations will start soon.

Foreman John Wachter Honored

At a special program held Friday afternoon, May 1, at the mill clubhouse at Kimberly, Wis., John Wachter, day foreman at the Kimberly mill, was honored for the completion of fifty years of service with Kimberly-Clark Corporation. He was presented with a gold watch on behalf of the company by H. G. Boon, general superintendent, and a miniature calender roll suitably engraved, by supervisors and department employees. Short congratulatory talks were given by S. F. Shattuck, vice-president, J. T. Doerfler, manager of the Kimberly mill, Fred Seaborne, staff member, Fred Kranhold, assistant general superintendent, and Ernst Mahler, executive vice-president and general manager. The master of ceremonies was J. A. Limpbert, superintendent of the Kimberly mill. Musical numbers were given by several local entertainers.

Mr. Wachter started work with Kimberly-Clark May 1, 1892, spending a number of years at the Vulcan and Telulah mills at Appleton, Wis. He was later transferred to Kimberly, where he became tower foreman January 1, 1923, and day foreman January 1, 1942. He is sixty-five years of age, and during his long service suffered only one slight injury.

Here's *Exactly* Why

The CONCAVE SIDE

Saves Belts-Saves Rubber-Saves Power!

Pick up any V-belt that has straight sides. Bend that V-belt while you grip its side-walls as in the picture above. You will feel the sides of the belt bulge out—as shown in Figure 1 on the right. Clearly, that out-bulge gives the belt a shape that does not fit its sheave groove.

Now look at Figure 2. There you see what happens when you bend a belt that is built with the patented Concave sides. You get a similar change in side-wall shape—but what a different result! The precisely engineered Concave side becomes perfectly straight. There is no out-bulge:—the full side-width of the belt *uniformly* grips the sheave groove wall. This means *uniform* wear—*longer* life—a saving in belts for you, a saving in rubber for the Nation. In addition, this full side-width grip on the pulley carries heavier loads without slippage—another saving of belts and a saving in power too!

Only belts built by Gates are built with the Concave side, a Gates patent.

What Happens When a V-Belt Bends

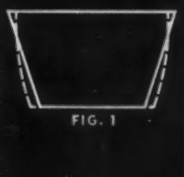


FIG. 1

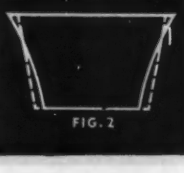


FIG. 2

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

Chicago, Ill. 549 West Washington
New York City 215-219 Fourth Avenue
Birmingham, Ala. 415 Liberty National Life Bldg.
Los Angeles, Cal. 2240 East Washington Blvd.
Denver, Colo. 999 South Broadway
Dallas, Tex. 2213 Griffin Street
Portland, Ore. 333 N. W. 5th Avenue
San Francisco, Cal. 2700 16th Street

Answer to Heavy Thrust Loads in Jordan Engines

A "CORRECT" WAY TO PREVENT EXCESSIVE WEAR UNDER HIGH SPEEDS AND HEAVY PRESSURES:

Problem: Jordans may differ in detail, but they are all similar to the one at the right. Each consists of a conical plug revolving within a hollow shell. At the large end, the plug spindle is supported by an adjustable thrust bearing. The plug is set up close to obtain the required "refining" of the pulp. This results in heavy thrust pressures on the bearing. Unless the right lubricant is used, the bearing will wear and eventually fail.

Answer: Where Jordans are equipped with wick-fed collar thrust bearings, as at the right, film strength and persistence of film are the chief oil properties required. *Gargoyle Vactra Oil* meets these requirements. This oil maintains a tough film that clings tightly to bearings, even under crushing radial and thrust loads. As a result, bearings stay cool; wear and power loss are minimized.

For grease-packed roller bearings, the extremely stable *Gargoyle Grease BRB No. 3* is highly efficient.

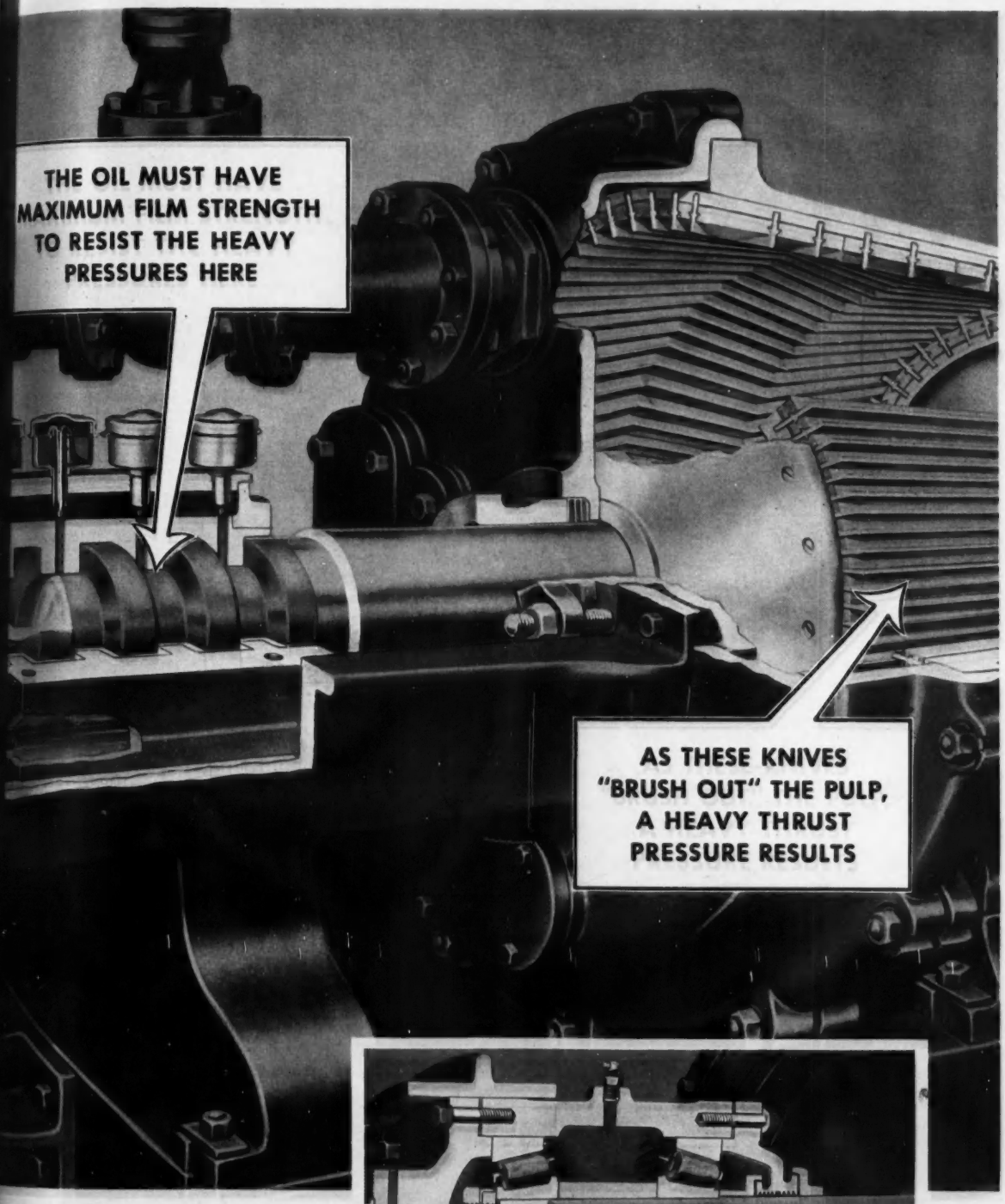
TO HELP MAINTAIN WARTIME PRODUCTION, CALL IN

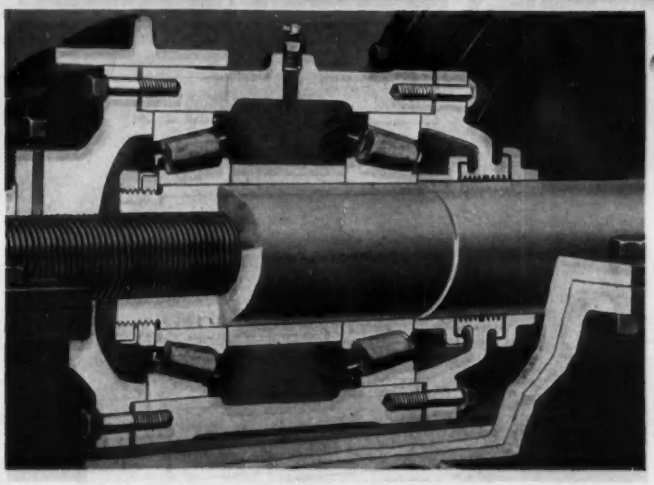
SOCONY-VACUUM for "Correct Lubrication"

SOCONY-VACUUM OIL CO., INC. — Standard Oil of N. Y. Div. — White Star Div. Lubrite Div. — Chicago Div. — White Eagle Div. — Wadhams Div. — Southeastern Div. (Baltimore) — Magnolia Petroleum Company — General Petroleum Corporation of Calif.

GARGOYLE

Lubricants


THE OIL MUST HAVE MAXIMUM FILM STRENGTH TO RESIST THE HEAVY PRESSURES HERE
AS THESE KNIVES "BRUSH OUT" THE PULP, A HEAVY THRUST PRESSURE RESULTS



For Grease-packed Roller Bearings, Gargoyle Grease BRB No. 3 is Economical and Efficient

Philadelphia Reports Demand More Normal

Book Paper Orders Fair With Supplies of Some Cheaper Lines Increasing—Demand For Kraft Continues Heavy—OPA Meetings Attracting Interest — Materials Salvage Committee Is Formed.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., May 11, 1942—Vacancies of the younger men employees in the paper houses are becoming more and more apparent because of the call to service; however, the employers, as a whole, are taking it in good grace although they admit they have a big problem on their hands in training new employes to take the places of those called to the service.

There is no perceptible change in the demand for paper here, and although prices are holding distributors are looking forward with some concern but considerable interest in the meeting that was held on May 7 in the Roosevelt Hotel, New York. This meeting was for the purpose of explaining the general maximum price regulation and was in charge of J. F. Strub, Office of Price Administration. The Paper Trade Association of Philadelphia sent two delegates and a number of representatives from the various houses here also were in attendance. The two delegates from the Paper Trade Association are expected to report to the members tomorrow, May 12, at a meeting which will be held in Room 631, Drexel Building, when there will also be discussed the regulations regarding the restrictions of local deliveries.

Supplies of Bogus and Sheathing Paper Larger

Stock is coming in more freely, particularly the cheaper grades such as gray bogus and sheathing paper, the demand for these grades being above normal, which is looked upon with much favor at this season of the year when building requirements are to a great extent the controlling factors in the stimulated buying of these grades. Government orders are reported coming in in goodly size, although on the other hand civilian needs are not quite up to normal. Among the grades being stocked by the Government are large quantities of chip board, used for containers for shells and cartridge clips to hold cartridges. The demand for book paper is fair, although printers are not quite as busy as they would like.

Kraft Bag Paper in Heavy Demand

Kraft paper is practically stationary with no reportable change, and an acute shortage of all grades of kraft and paper bags is reported pending.

Name Committee to Salvage Materials

The Delaware County Chamber of Commerce has appointed ten members to direct salvage operations among industrial plants in Chester and nearby areas. Formation of the committee took place on Wednesday last at the Chester Club after 40 representatives of the leading concerns in the city and county heard Philip G. Ruse, co-ordinator of the Industrial Salvage Division of the WPB, warn of the danger facing the country unless more paper, metal, rubber and other materials can be salvaged. Robert A. Reddie, representing the Scott Paper Company, was chosen as general chairman of the committee, each member of which will be responsible for setting up a salvage system in his particular field. Among those chosen as members of the general committee was W. S. Sprague, who will be in charge of salvaging paper and paper products.

Name Fiber Can Committee

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 13, 1942—T. Spencer Shore, chief of the WPB Bureau of Industry Advisory Committee has announced the following fiber can committee: A. J. Baumgardt, Soften Fibre Can Company, St. Louis, Mo.; J. H. Crones, W. C. Ritchie & Co., Chicago, Ill.; W. H. Hopple, The Cin-Made Corporation, Cincinnati, Ohio; William C. Stelk, American Can Company, New York City; W. L. Stevens, Improved Mailing Case Company, New York City; L. C. Tienken, Cross Paper Products Corporation, New York City; W. F. Walker, The Cleveland Container Company, Cleveland, Ohio.

Douglas Kirk, Chief of the Containers Branch, is government presiding officer.

Paper Club to Meet May 26

At a meeting of the Board of Governors of The Paper Club of New York held last week, it was decided to hold the first annual meeting of the organization at the New York Athletic Club on Tuesday evening, May 26. President Arthur W. Pohlman appointed E. F. "Bud" Miles as chairman of the committee on arrangements. The meeting is for members only.

The program will include the annual reports and election of officers for the ensuing year to be followed by an old fashioned beefsteak dinner and entertainment. President Pohlman has appointed a nominating committee headed by Frank M. Van Horn and including Adolph Warshow, David S. Landau, Oswald F. Marquardt and Charles C. Walden, Jr.

Michigan Division to Meet May 21

Joseph Waber, secretary-treasurer of the Michigan Division of the American Pulp and Paper Mill Superintendents Association, announces that the Michigan Division will meet Thursday, May 21, at the Park American Hotel in Kalamazoo. Dinner will be served at 6:30 P.M. Major Edward Chayes of the Quartermaster Corps at Fort Custer will speak on "Salvage Operations," this general heading covering such topics as conservation and reclaiming of paper products, rubber products, metals and numerous other materials. Major Chayes is connected with the office of Colonel Wilkinson who spoke to the Michigan Division last year on the "Requirements of Fort Custer."

FROM THE ORIGINAL, PAINTED ESPECIALLY FOR NIAGARA ALKALI COMPANY BY DE POSTELS

FOR MORE than thirty years Niagara Alkali Company and Electro Bleaching Gas Company have been working side by side, each serving its customers separately. Today their manufacturing, research and personnel facilities are unified into one compact organization, geared for service on a more efficient scale. Resources and products remain the same, as do the friendly customer relations that have been built up over the years. But the new organization is prepared to give smoother, more satisfactory service — and to respond with a fuller measure to the demands of the industries that use its products. The name of this new organization is NIAGARA ALKALI COMPANY.

EBG Niagara Alkali Company

60 EAST 42nd STREET, NEW YORK, N. Y.

CAUSTIC POTASH · CAUSTIC SODA
PARA · CARBONATE OF POTASH
Liquid Chlorine

Paper Merchants Concerned at Wage Costs

Government Efforts To Check Inflation Generally Regarded With Approval But Rising Wage Costs Cause Grave Concern — Paper Merchants Attend OPA Meetings—Other Sessions For Next Week.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 11, 1942—The Chicago paper market showed little change in the past week with local merchants refraining from any particular comment on the General Maximum Price Regulations, until they had more ample opportunity to study it. Indications were that the market felt the checking of inflation to be absolutely necessary but there is grave concern over the fact that while prices were frozen as of the March level, rising wage costs received no such ceiling. "Informal freezes" on the paper industry have taught many members of the paper trade to realize the problems that will come up and it is expected that every effort will be made to eliminate "price squeezes" resulting from either labor costs or acute lags which may still be heavily in existence. During the week book papers continued to report a loss of business as the advertising profession took stock of what it had to sell. Groundwoods, however, rolled along in fairly active trends with business keeping up "fairly well." Sulphites likewise found the market comparatively active in all grades while certain specialties joined with krafts in assuming a position as bellwethers of the industry right at this time. The waste paper market showed little change.

Hold Initial Price Order Meeting

Nearly 400 wholesale paper merchants in Chicago and surrounding territory attended a mass meeting held at the Morrison Hotel in Chicago on May 8 to review the pending price freezing order which goes into effect at retail on May 18.

The meeting was arranged under the sponsorship of the National Paper Trade Association and the Office of Price Administration and lasted almost the entire day as paper executives bombarded OPA representatives with questions concerning pricing, record keeping and the "roll back" problem where the price squeeze becomes acute.

The OPA was represented by M. D. Schwartz of the distributive section who described the situations which necessitated the over-all freezing order and by J. F. Strub who likewise aided in the general clarification program.

After describing the events leading to strong steps to control inflation and after reviewing the high points of the order, the OPA adjourned the meeting for a sufficient time to permit paper executives to put in writing the many questions on which they desired an answer. To properly channelize the matter and to prevent a repetition of questions on the same subject, a number of paper executives more familiar with the order were drafted to assist the government officials. Included in this list of "draftees" were W. N. Gillette of the Chicago Paper Company, William Shay; N. A. Altman; H. A. Washburne and A. B. Tucker representing the fine paper merchants and L. S. Altholz of Inlander-Steindler Paper Company; Corwine E. Roach of the Capitol City Paper Company at Springfield; S. S. Weil of Weil & Sons and William Chukerman of J. Chukerman Company representing the coarse paper wholesale group.

The questions centered around a determination of the maximum price as the highest price delivered on a specific grade during the month of March. Paper representatives were warned that if they did not make sales on these grades in March they were to use the highest offering price as quoted or otherwise regularly quoted and, in the absence of this guide, to price in accordance with similar grades sold or listed during the base month. They were likewise warned that discounts and allowances were not to be changed except in so far as they might lead to a reduction—not an increase—in the price.

Other questions covered pricing of seasonal goods, keeping of base period records and future records and licensing. It was pointed out that the only items on the "cost of living list" were now toilet tissue, paper napkins, sanitary napkins and face tissues.

Mr. Schwartz also announced that the paper and pulp industry would be asked to cooperate in the enforcement of the order through the medium of regional committees of representative paper men. These men are to be expected to give advisory service and to aid in acting as a clearing house on "roll back" problems and other matters affecting the industry. The committees are to be on a manufacturer, wholesaler and retailer basis, vertical committees appointed to expedite not only an understanding but a full enforcement of the OPA order.

The paper industry, in turn, indicated a recognition of the need for controlling inflation and evidenced a splendid willingness to cooperate not only through the industry committees but in all other ways.

More OPA Sessions Scheduled

The OPA sessions with the Chicago wholesalers described elsewhere in these columns marked the beginning of a series of meetings to be held in this area next week when the big task of acquainting the paper industry with the ramifications of the Price Order really gets under way. OPA officials will be in Chicago all during the next week holding sessions for manufacturers and converters as follows: Jobbers and the paper publications, Stevens Hotel, May 15; greeting cards, announcements, tablets and blank books, May 14 at the Stevens; corrugated and solid fibre boxes, May 14 at the Stevens; set up and folding cartons, Stevens, May 15; paper board, Stevens, May 15; corrugated products, May 13, at the Stevens; tubes, cores, spools, etc., at the Stevens on the 13th and tissues also on the 13th at the Stevens. It is expected that the OPA officials will follow the "questions and answers" method used so successfully last week in dealing with the wholesaler paper group at the meeting at the Morrison Hotel.

ASKS BIDS FOR 93,650,000 POUNDS OF PAPER

(Continued from page 7)

Lot 177. The use of substance 56-, 72-, 80-, and 88-pound paper was discontinued.

Sulphite Index.—A new Lot No. 183 was added to provide for 148-pound paper. 230-pound paper was replaced by 280-pound paper.

50 Per Cent Rag Index.—Two new Lots Nos. 189 and 192 were added to provide for 148-pound white and colored paper. The use of 230- and 362-pound paper was discontinued. Lots 191 and 193 were eliminated. Lot 192 was renumbered as Lot 191.

100 Per Cent Rag Index.—New Lot No. 195 was added to provide for 148-pound paper.

Coated Cover.—The use of 160-pound paper was discontinued.

Machine Finish Cover.—Lot No. 204 was eliminated since smooth finish cover paper is no longer needed. This grade of paper is now designated "Antique-Finish Cover" instead of "Machine-Finish Cover."

Wood Manila.—A new Lot No. 210 was added to provide for dry finish paper in 4¾-, 5¾-, and 7½-inch rolls. Lots 209 and 210 were renumbered 208 and 209 respectively.

Chemical Wood Manila.—The use of 100- and 120-pound paper was discontinued. Lot No. 212 was eliminated.

Rope Manila.—The use of 120- and 140-pound paper was discontinued. Lot No. 213 was eliminated. Lot No. 214 was renumbered 213.

Lot 265—*High Finish Red Sulphite.*—The use of 400-pound paper was discontinued.

Lot 271—*High Finish Sulphite Manila Tag.*—The use of 160-, 200-, and 240-pound paper was discontinued.

Wood Bristol.—The use of several colors was discontinued. Lot No. 310 was eliminated.

United States Postal Card Bristol.—Lots 325, 326, and 327 were added to the schedule to provide for a 6-months' contract for United States postal card paper in place of open-market purchases.

Lots 361 and 364—*Chip Board and Lined Chip Board.*—The use of these grades of board was discontinued.

The following grades of paper were eliminated from the schedule since only small quantities are required. These will be purchased in the open market as needed.

Lots 31 and 32, 100 Per Cent Rag Antique Book.
Lot 53, Sulphite Writing.
Lot 197, White Tissue.
Lot 220, No. 1 Kraft.
Lot 251, White Paraffin.
Lots 254 and 255, Blotting, white and colored.
Lots 258 and 259, Desk Blotting, colored.
Lot 262, Oiled Manila Tympan.
Lot 263, Plate Wiping.
Lot 264, Back Lining.
Lot 362, Marble Grained Bond.
Lot 365, Lined Boxboard.

This schedule embraces 136 lots, which is 47 less than the preceding schedule. The quantity estimated for the term of 6 months beginning July 1, 1942, is approximately 93,650,000 pounds, as compared with 53,400,000 pounds for the previous contract period of 3 months.

The Committee on Paper Specifications respectfully submits its Forty-Fourth Report and the accompanying recommended schedule for paper for the public printing and binding and blank paper for the use of the Government departments and establishments in the District of Columbia for the term of 6 months beginning July 1, 1942.

Paragraph 90 of the instructions under the title "United States Products" requiring the use of pulp manufactured in the United States only has been eliminated.

In view of the fact that the shortage of chlorine as anticipated by the War Production Board did not fully materialize, the committee found it advisable to limit the unbleached, chemical wood pulp content to 25 per cent in all grades of paper which permitted 100 per cent unbleached pulp in the preceding 3-months' contract.

In an effort to develop new markets for cotton the stock requirements for all rag content papers were revised to state the percentage of "cotton or flax fibers" instead of the percentage of "rag".

The pH requirements for all grades of paper except manifold were increased 0.3 pH.

In order to conform with the simplification and standardization program of the War Production Board the ash content of all book papers except light weight machine finish book, Lots Nos. 23 and 24 is specified as "not less than 15 per cent."

The bursting strength and the folding endurance, requirements of writing, map, manifold, bond, ledger, and index papers, where a maximum of 10 per cent ash is specified, were reduced 25 and 40 per cent respectively.

In the interest of economy and conserving chemical wood pulp a new lot, No. 2, calling for Telephone Book newspaper in rolls 28 and 38 inches wide was added to the schedule.

Machine Finish Book.—Lots 10, 11, 13, and 14 were eliminated. Lot No. 12 was renumbered Lot No. 10. The use of 120- and 140-pound paper was discontinued.

Offset Book.—The minimum ash requirement was increased from 8 to 10 per cent. A new lot, No. 20, was added to provide for 90-pound paper. Old Lot No. 20 was renumbered 19.

Lot 22.—*Antique Book.*—The 120-pound paper was eliminated for reasons of economy.

Lots 26 to 28—*50 Per Cent Rag Antique Book.*—Lot No. 28 was eliminated since this paper in 90-pound weight is no longer needed. The paper specified under Lot No. 27 is required to be suitable for writing on with ink.

Lots 33 to 36, inclusive—*Supercalendered Book.*—Lot No. 36 was eliminated.

Lot No. 42—*50 Per Cent Rag Coated Book.*—This grade of paper was eliminated.

Lot No. 44—*Ground Wood Mimeograph.*—The stock requirement was changed to read 60 plus or minus 5 per cent ground wood to conform with Federal Specifications.

25 Per Cent Rag Mimeograph Paper.—Lot No. 49 was eliminated.

Lot 63—*Ground Wood Writing.*—This lot was eliminated since it is not presently needed.

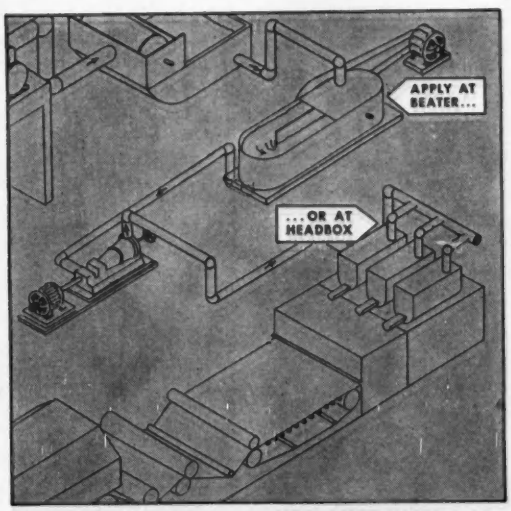
How to Save Strategic Chemicals And Still Control Slime Without Shutdowns for Cleanups

By JOHN D. FLEMING, Sales Development Department,
MONSANTO CHEMICAL COMPANY

MICROORGANISMS in a paper mill are trouble enough in ordinary times. Now that time is at a premium and mills are crowded to capacity, they spell double trouble.

If allowed to thrive unchecked they soon threaten production schedules, causing slime spots and breaks, blinded wires and clogged felts, dirty stock, clogged water lines, rotted felts and a host of other threats to a mill's profit margin.

Even in ordinary times it usually takes a good, continuous anti-slime treatment as well as good housekeeping to keep fungi and bacteria under control. Now that few mills can spare the time or the lost production for their usual periodic cleanups, the anti-slime treatment becomes more important than ever.



Fortunately, Santobrite, Monsanto's highly effective fungicide and bactericide which has been used by many leading mills for anti-slime treatment with outstanding success, is still available for that purpose. However, supplies of both phenol and chlorine, the raw materials from which Santobrite is made, are critically tight and it is essential that the most efficient possible use be made of every ounce of Santobrite.

Actually few specific suggestions can be made here on how you can get adequate protection in your particular mill with a minimum of Santobrite. You will require from 0.1 to 1.0 pound per ton of paper or pulp produced depending on the extent to which your water system is closed, the characteristics of your stock and the quality of your water supply. The cost will be from 1½ to 18 cents per ton of paper or pulp.

Some mills do not have any great amount of slime between the beater and machine and have found that they save Santobrite by adding it at the machine. Others, who are troubled by slime between beater and machine, as well as on the machine, find it necessary to start treatment at the beater.

One important characteristic of Santobrite which greatly increases its efficiency in all mills — it is not spent on organic matter as is chlorine. On the contrary, it tends to concentrate in the system.

Santobrite can be introduced into the system with about equal efficiency in powder form through standard chemical solution feeders . . . by hanging a 7-pound bag of 1-ounce briquettes at some point where the flow of water is sufficient to effect solution at the desired rate . . . or by placing briquettes in a brass wire basket receiving water from one of the showers.

The use of Santobrite is compatible with chlorine and chloramine treatment; and in cases where the results given by these treatments are not entirely satisfactory, Santobrite may be used with good advantage to supplement them.

Chemically stable, noncorrosive to metals, nonvolatile, practically odorless, Santobrite is well suited to the paper industry's need for an anti-slime treatment effective against *both* fungi and bacteria. It is available in powder or briquette form, requires no expensive apparatus for satisfactory application, and, when properly handled, its use involves no hazard to the health of mill operators or consumers of the mill product.

For experienced technical advice on how you can protect *your* mill from the ravages of bacteria and fungi with a minimum of Santobrite, inquire: MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, St. Louis, Missouri.

100 Per Cent Rag White Chart.—Two additional Lots Nos. 69 and 70 were added in order to distribute the manufacture of this grade of paper among three or more mills. Old Lot 69 was renumbered 68.

Sulphite Manifold.—Lots 70 to 72 inclusive were renumbered 71 to 73 inclusive. Old Lot 73 was eliminated.

50 Per Cent Rag Manifold.—Lots 78 and 80 were eliminated. Lot 79 was renumbered 78.

100 Per Cent Rag White Manifold.—Lot No. 83 was eliminated since 14-pound paper of this grade is no longer needed.

Delaware Valley TAPPI Meets

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry held its last regular meeting of the present season on Friday, May 1st, 1942, at the Engineers Club, Philadelphia, Penna. E. J. Albert presided as chairman.

On June 5 a dinner dance will be held by the section at the Bala Country Club. The golf course will be available in the afternoon to those interested. Information or tickets can be obtained from Mr. Harry Hulmes, who is in charge of the dance, or officers of the section.

The results of the election of officers of the section were announced, the slate made up by the Nominating Committee being elected. The officers for the coming year are:

Chairman—J. D. Davis, Dill & Collins, Inc., Philadelphia, Pa.; Vice-Chairman—F. J. McAndrews, Glassine Paper Company, Manayunk, Pa.; Secretary—E. N. Poor, W. C. Hamilton & Sons, Miquon, Penna.; Treasurer—L. B. Miller, W. H. & L. D. Betz Company, Philadelphia, Pa.; Executive Committee—C. M. Connor, Glassine Paper Company, Conshohocken, Pa., and E. J. Albert, Thwing-Albert Instrument Company, Germantown, Pa.

J. G. Little of the Synthetics Department of Hercules Powder Company was the speaker and gave a talk on Synthetic Resins; Rosin Esters, New Resins for the Paper Industry. An outline of the properties of rosins and various synthetic resins made from them was presented. A number of these materials are still in the development stage, but some of them are being used in commercial runs and are giving good results. Some rosin esters are useful with paraffin coatings to produce a harder film. One type in particular forms little sludge when mixed with paraffin. Casein compatible resins are available, which give clear, hard, glossy films. Diethylene Glycol esters of rosin are used with starch in textile sizing to prevent dusting but are not practical for starch-clay coatings for paper as the wax test is definitely reduced. Polyhydric esters of N wood rosin are used for adhesives and plasticizers and give a high melting point, flexible film. Some are highly insoluble in oils and grease. There are some types of resins that are used with asphalt for impregnation, the viscosity being appreciably lowered along with some reduction in the melting point. Still other types are being used for shellac substitutes.

Those present included: Edward J. Albert, S. G. Briscoe, W. J. Burke, A. L. M. Bixler, Samuel M. Bratton, A. M. Cooper, C. M. Connor, J. D. Davis, D. Dieffenderfer, J. C. Dieffenderfer, Paul Easton, J. Edge, James H. Fritz, Lois V. Hans, J. G. Little, M. Craig Maxwell, George B. Martin, Louis E. McGrath, Lewis B. Miller, Malcolm C. Moore, O. S. Raub, F. J. Schott, J. C. Schmidt, W. K. Schlotterbeck, John R. Shallcross, John B. Shields, Charles A. Shubert, George H. Spencer, George M. Suydam, Archie E. Waugh and H. L. Winslow.

Merchants Attend OPA Meeting

The first of a series of important meetings arranged by the Office of Price Administration was held May 7 in the ballroom of the Hotel Roosevelt, New York. The presiding officials of the OPA from Washington were: J. F. Straub, Chief Paper Distributors Unit; Martin D. Schwartz, Assistant to Mr. Straub, handling coarse papers; Albert Miller, Assistant to Mr. Straub, handling fine papers, and Henry Stein, of the Legal Department; Glenn Mather, Chief, Paper and Paper Products Section, New York Regional Office, and R. W. Geils, Inspection Department of the New York office.

This and other meetings to be held in principal cities are for the purpose of establishing contacts between the regional or field officials of the OPA and paper manufacturers and wholesalers. At the initial meeting, the importance of the General Maximum Price Regulation, promulgated to control inflation was explained. The second part of the meeting was devoted to a discussion of the salient features of the general price regulation and the Supplementary Price Regulation No. 129, which specifically covers paper, paper products and raw materials for paper and paper products. A large part of the meeting was devoted to answers by the OPA officials of questions submitted by general paper merchants. Over three hundred were present.

Other meetings for paper merchants were held May 8 at Chicago, and Boston, Mass.; May 11 at Cleveland, Ohio and Denver, Colo.; May 12 at Kansas City, Mo.; May 13 at Baltimore, Md., and Dallas, Texas; May 14 at San Francisco, and May 15 at Atlanta, Ga.

Clopay Corp. Buys Mill Property

SPRING VALLEY, N. Y., May 4, 1942—Spring Valley's long wait for a worthwhile industry to occupy the former Dunlop mill property on Church street has finally been rewarded. It has been disclosed that a deal was closed recently which transfers the property to the Clopay Corporation of Cincinnati, Ohio.

The reputation of the firm, manufacturers of paper products, is such that it seems certain that Spring Valley's largest mill property is at last to be occupied by a permanent industry giving employment to many hands. The firm has a nation-wide reputation and uses some of the country's leading magazines for the advertising of their products. One of the best known of their products are the window shades sold in nearly all five and ten cent stores. One of their war-time products are blackout window shades sold in the same type stores throughout the nation.

At the present time they are operating a plant in Cincinnati and one on Long Island with from 40 to 50 per cent of their work classified as defense work. It is understood that the Long Island plant will be moved to Spring Valley.

BROWN FUEL SAVERS for BOILER ROOMS

IF you use steam for power, heating or processing—do you know how much steam is generated for every dollar expended for fuel? Are your boilers operating at their highest efficiency? How economically is steam being used?

To get the answers to these questions it is essential to measure temperatures, pressures, flows, $\%CO_2$ and liquid levels.

Whether you burn oil, gas or coal, Brown Indicating and Recording Instruments furnish the essential information to operators and engineers to enable them to reduce fuel costs. For example:

BROWN FLOW METERS . . . tell how much steam is generated by each boiler; the amount of water fed to the boilers, and the rate and quantity of blow-down.

BROWN CO_2 METERS . . . when used as a firing guide, enable operators to hold the correct per cent CO_2 and prevent fuel losses due to improper air-fuel ratios.

BROWN THERMOMETERS AND PYROMETERS . . . are essential guides in checking Flue Gas, Feed Water, Economizer and Superheater temperatures. They are vital factors in overall operating efficiency.

BROWN PRESSURE GAUGES . . . aid in maintaining steam pressures, not only in the boiler, but also in each department.

Our engineers will be glad to recommend the instruments that will most economically meet your boiler room or plant requirements. Write for information.

For Temperatures . . . . . Pressures . . . . . Flows . . . . . Liquid Levels

BROWN INSTRUMENTS

ELECTRIC • AIR OPERATED

THE BROWN INSTRUMENT COMPANY, 4510 WAYNE AVENUE, PHILADELPHIA, PENNSYLVANIA
DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR CO.
MINNEAPOLIS, MINNESOTA, AND 119 PETER STREET, TORONTO, CANADA
Wadsworth Road, Perivale, Middlesex, England — Nybrokajen 7, Stockholm, Sweden

Held for Violation of Sherman Act

WASHINGTON, D. C., May 11, 1942—The use of the patent laws to promote price fixing and monopoly was denounced by the Supreme Court today in holding that ten building material manufacturers had violated the Sherman Anti-Trust Act.

Affected were the Masonite Corporation, Celotex Corporation, Certain-Teed Products Corporation, Johns-Manville Sales Corporation, Insulite Company, Flintkote Company, National Gypsum Company, Wood Conversion Company, Armstrong Cork Company and Dant & Russell, all makers of "hardboard."

Masonite, it was stated, obtained patents in 1926-28 for "hardboard made of wood chips, but Celotex several years later began making hardboard from sugar cane waste. Masonite sued Celotex, but there was a settlement of the litigation and an "agency" agreement was made.

Eventually, the government said, the other concerns entered into these agreements to operate sales agencies for Masonite products, but the agreements, the government asserted, were really schemes to control prices and production of hardboard.

"This kind of marketing device thus actually or potentially throttles or suppresses competing and noninfringing products and tends to place a premium on the abandonment of competition," said Mr. Douglas. "It is outside our competence to inquire whether the result was or was not beneficient or whether the evil was or was not realized.

"The power of this type of combination to inflict the kind of public injury which the Sherman Act condemns renders it illegal per se. If it were sanctioned in this situation it would permit the patentee to add to his domain at public expense by obtaining command over a competitor. The fact that Masonite alone fixed the prices and that the others never consulted with Masonite concerning them cannot make the combination any the less illegal."

Plan to Conserve Manpower

The launching of a movement organized by a group of the nation's leading corporation executives to stem the mounting drain on industrial manpower through accidents has just been announced by William A. Irvin, former president of the U. S. Steel Corporation and chairman of the newly-formed War Production Fund to Conserve Manpower.

The announcement was made following a meeting of the Trustees of the National Safety Council in the luncheon lounge of the General Electric Company, 570 Lexington Avenue, New York, where communications were read from President Roosevelt and Donald Nelson, Chairman of the War Production Board, commending industrial leaders for taking the initiative in an undertaking of such consequence to the national war effort.

The War Production Fund resulted from a proclamation of President Roosevelt calling upon the National Safety Council to mobilize the nation's volunteer resources against a rising accident toll that last year claimed the lives of 101,500 persons, permanently disabled 350,000, injured 3,750,000 workers, and deprived industry of 460,000,000 man-days of labor.

Against the background of the country's urgent need for skilled manpower, these facts stand out sharply:

(1.) Accidents last year were the first cause of death among all men from twenty-two to thirty-eight years of age.

(2.) In 1941 alone, accidents (both fatal and nonfatal) cost as many productive man-days as would be required to build sixty-six battleships—nearly twice the number possessed by the combined American and British navies.

(3.) Approximately 47,000 workers of all ages were killed, representing labor sufficient to build twenty battleships, 200 destroyers and 7,000 heavy bombers.

(4.) Accidents cost $3,750,000,000, enough to pay the entire expense of running New York City for six years.

In order to curb the mounting losses of life and interruptions to war production, the President has called for a "concerted and intensified campaign against accidents," whereby the National Safety Council would extend tested accident-prevention techniques more widely throughout the country's 196,000 industrial plants, and carry a thorough program of safety education to the homes, farms, and schools of America.

Mr. Nelson characterized the proposed safety movement as "an inherent part of the overall effort directed toward maximum war production.

"A vastly broader program," he said, "involving the cooperation of thousands of volunteer groups in all parts of the country, is now needed to halt the mounting drain on our war effort.

"The National Safety Council is well qualified to organize and direct such a program and, for this reason, we are interested in seeing that this organization's proposed appeal to business and industry for effective cooperation is conducted under the calibre of leadership that will assure its success."

Officers and Trustees of the National Safety Council assert that the enormous and growing accident rate suffered by the United States is largely needless. In the many states and communities where sound safety programs have been instituted, accidents have dropped fifty percent and more.

The conclusion, based on the entire history of safety accomplishments, is that the accident toll persists and grows because hardly more than ten percent of the population is reached by tested safety practices.

"In the industrial area, for example, about 25,000 industrial plants, many of which are served by the National Safety Council, now have effective safety programs," Mr. Irvin said. "But 171,000 plants remain which are not adequately protected. Bad conditions exist in many of the new plants mushrooming under war conditions, because of the use of new materials by inexperienced workers.

"It is estimated that the expanded safety program will cost $5,000,000, and the War Production Fund has undertaken the responsibility of financing the project through enlisting the support of the nation's major industrial and business corporations."

The National Safety Council is a non-profit organization with a membership of more than 5,000 leading businesses and industries. For nearly thirty years, this agency has led—through its staff, its sectional officers, and dozens of regional and local committees—the battle against the 100,000 deaths and 9,000,000 injuries occurring every year.

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SKANEATELES FALLS, N.Y.

CONSTRUCTION NEWS

Los Angeles, Cal. — The California-Oregon Paper Mills, 2001 East 57th street, Vernon, Los Angeles, manufacturer of kraft and other paper stocks, have approved plans for one-story addition, to be used for general shop service. General contract for erection has been awarded to William P. Neil Company, 4814 Loma Vista street, Los Angeles, and work will proceed at once. No estimate of cost announced. Company is a division of Columbia River Paper Mills, Vancouver, Wash.

Green Bay, Wis.—The Northern Paper Mills, manufacturers of tissue and kindred paper stocks, have begun foundations for new two-story building, about 30 x 40 feet, at Day and Madison streets, to be used primarily for office service. Cost estimated about $15,000. It is understood that erection will be carried out by day labor.

Milwaukee, Wis.—The Milwaukee Lace Paper Company, 1306 East Meincke avenue, manufacturer of lace papers and allied paper goods, is said to be arranging for immedaite erection of proposed new addition to plant, previously referred to in these columns. It will be one-story, about 70 x 120 feet, reported to cost close to $50,000, including equipment. Additional sub-contracts are being awarded for roofing and sheet metal work, and for millwork, to the F. J. A. Christiansen Roofing Company, Inc., and Paramount Woodwork Company, respectively, both of Milwaukee. The Charles Salb Construction Company, Inc., 2045 North Forty-ninth street, Milwaukee, has the general erection contract. Charles F. Smith, 739 North Broadway, is architect. Completion of structure is planned during summer.

Montieth, Ga.—The Union Bag and Paper Corporation, Savannah, Ga., manufacturer of kraft wrapping papers, etc., has concluded negotiations for purchase of tract of about 4840 acres at a place known as Montieth, on Augusta road, and proposes to develop for pulpwood supply for local mill in the future.

Tacoma, Wash.—The St. Regis Paper Company, Kraft Pulp Division, 801 Canal street, is completing construction of a new boiler house at mill, previously noted in these columns, and expects to have unit ready for service in near future. It is reported to cost in excess of $50,000, with equipment.

Amcelle, Md. — The Celanese Corporation of America, Inc., 180 Madison avenue, New York, N. Y., manufacturer of rayon products, is said to have approved plans for a new one-story technical and research laboratory at its mill at Amcelle, near Cumberland, and erection is scheduled to begin at once. Cost is reported over $40,000, including equipment.

Kalamazoo, Mich.—The Rex Paper Company, manufacturer of coated and other paper stocks, has developed a new blackout paper for air raid service, providing an effective and economical means for preparing for such emergencies. A part of mill production will be given over to the new specialty, for which patents have been applied for.

New York, N. Y.—Rae Eldin, 130 Fenimore street, Brooklyn, has filed plans for alterations and improvements in paper warehouse at 137-39 Wooster street, New York, and work will be placed under way at once. No estimate of cost announced. Walter H. Volckening, 145 Forty-fifth street, New York, is architect.

Huntington, Mass.—Fire recently destroyed former paper mill at the American Writing Company at Huntington, with loss reported close to $25,000.

Pisgah Forest, N. C.—The Ecusta Paper Corporation, manufacturer of cigarette papers, has superstructure under way for new one-story addition to mill, previously noted in these columns, and will push work to early completion. It will be used for storage and distributing service, with cost reported approximately $70,000, including equipment. The Fiske-Carter Construction Company, Greenville, S. C., has the general erection contract.

Wilmington, Del.—The American Viscose Corporation, Delaware Trust Building, Wilmington, manufacturer of viscose rayon products, reports an expenditure of about $1,650,000 for mill expansion and improvements during the first three months of present year. Further extensions and betterments are planned at different mills during remainder of 1942.

New Companies

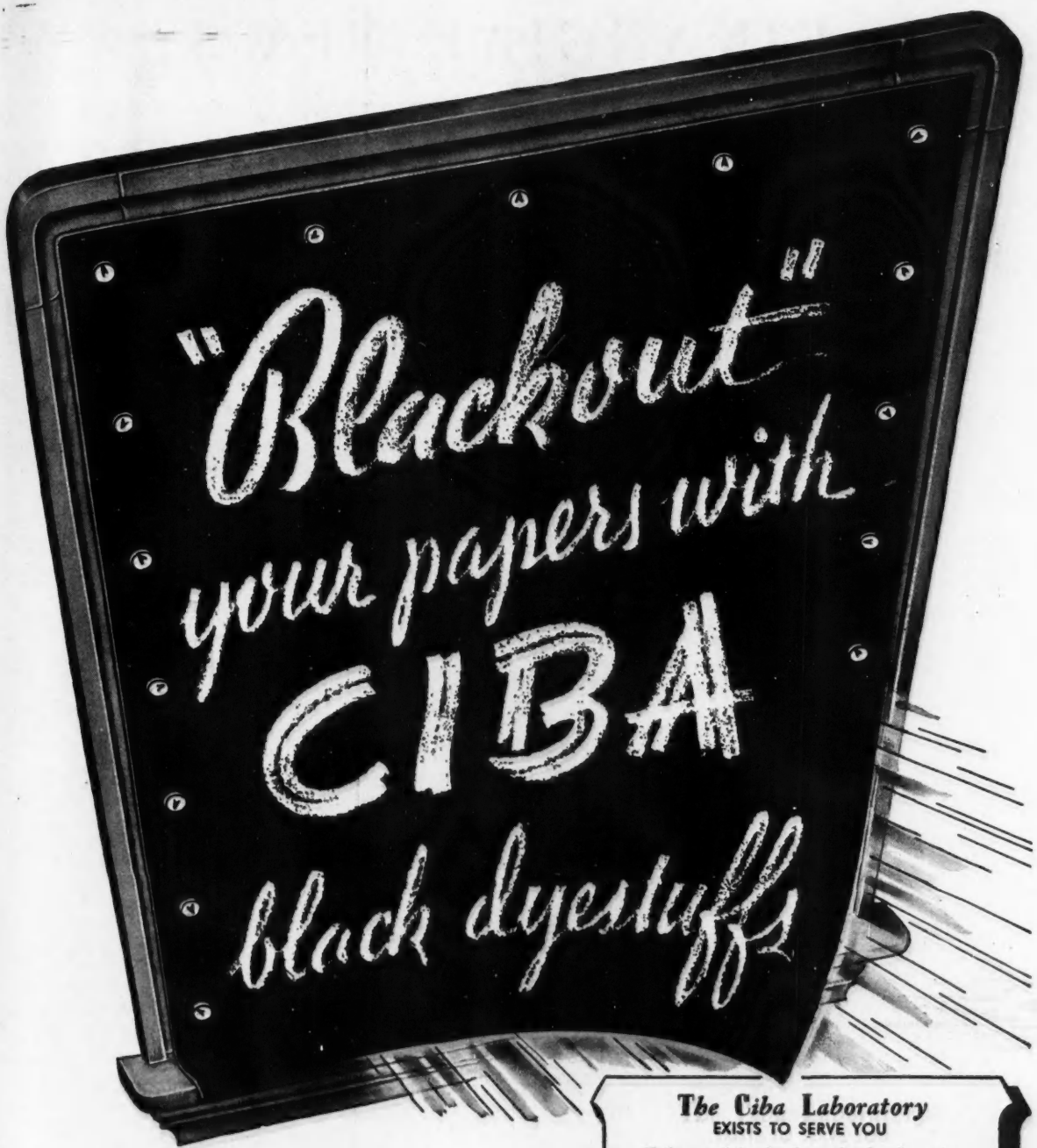
New York, N. Y.—The World Container Manufacturing Corporation has been incorporated with capital of 100 shares of stock, no par value, to manufacture paper boxes and containers, etc. New company is represented by Zager & Skodnick, 160-16 Jamaica avenue, Jamaica, L. I., attorneys.

New York, N. Y.—Fiberol Products, Inc., has been organized with capital of 100 shares of stock, no par value, to manufacture and deal in fiber products of various kinds. New company is represented by Davidson & Mann, 122 East Forty-second street, New York, attorneys.

New Flame Retarding Product

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 11, 1942—The H. D. Catty Corporation, represented here by the H. D. Catty Corporation of New England, has a new product on the market, a glare-proof, flame retarding "Cellophane," for dimming store windows. The product, however, is transparent, so that the contents of the window may be seen. The "Cellophane" is made in eight standard colors, but dark blue is recommended. It can be used also in dimming headlights. This material is used extensively in Government specifications by cable manufacturers for identification by winding the wires with it within the cable, employing various colors in many combinations. This "Cellophane" has been passed by the OPB. In the short time, it has been on the market, the new product has moved exceedingly well.



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FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending May 9, 1942

STOCKS

	High	Low	Last
A. P. W.	1⅝	1¼	1⅝
Armstrong Cork Co.	24¾	24	24¾
Celotex Corp.	7	6¾	7
Celotex Corp., pf.	69¾	69¾	69¾
Certain-Teed Products Corp.	1⅞	1¾	1⅞
Certain-Teed Products Corp., pf.	27	24	27
Champion Paper & Fibre Co.	14¾	14½	14¾
Champion Paper & Fibre Co., pf.	95½	93¾	95½
Congoleum Nairn Co.	13	12¾	12¾
Container Corp. of America	12⅞	12½	12½
Continental-Diamond Fibre Co.	7½	7½	7½
Crown-Zellerbach Co.	10½	10⅛	10½
Crown-Zellerbach Co., pf.	81	79	79⅜
Flintkote Co.	11⅜	11	11⅜
Robert Gair	2	1¾	1¾
Robert Gair, pf.	9½	9½	9½
International Paper Co.	12⅝	11⅝	12
International Paper Co., pf.	53½	52	53½
Johns-Manville Corp.	52	50¾	51⅞
Johns-Manville Corp., pf.	125	125	125
Kimberly Clark Corp.	26	25	26
MacAndrews & Forbes	16	15¾	16
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	23½	23½	23½
Mead Corp.	7¼	7	7¼
Mead Corp., pf.	74	73½	73½
Paraffine Companies, Inc.	23	23	23
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	8¾	8¾	8¾
Rayonier, Inc., pf.	....	....	....
Ruberoid Co.	18¼	17½	18¼
Scott Paper Co.	30	27⅞	30
Scott Paper Co., pf.	114	112⅞	112⅞
Sutherland Paper Co.	21	20½	21
Union Bag & Paper Corp.	8⅞	8⅝	8¾
United Paperboard Co.	3½	3¼	3¼
U. S. Gypsum Co.	43¾	42½	43
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	13	12⅜	13

BONDS

Abitibi Pulp & Paper Co. 5s '53	48½	48	48
Celotex Corp. 4½s '47	96⅝	96¼	96⅞
Certain-Teed Products Corp. 5½s '48	86	84⅛	86
Champion Paper & Fibre Co. 4¾s '50	....	....	....
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	104⅞	104¾	104⅞
International Paper Co. 5s '47	104	103¾	103¾
Mead Corp. 4½s '55	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending May 9, 1942

STOCKS

	High	Low	Last
American Box Board Co.	4⅝	4½	4½
Brown Co., pf.	....	....	....
Great Northern Paper Co.	....	....	....
Hummel-Ross Fibre Corp.	4⅛	4⅛	4⅛
National Container Corp.	8⅛	8⅛	8⅛
St. Regis Paper Co.	1⅜	1⅜	1⅜
St. Regis Paper Co., pf.	109	109	109
Taggart Corp.	2⅛	2⅛	2⅛

BONDS

American Writing Paper Co. 6s '61	80½	80½	80½

U. S. Gypsum Nets $1,141,894

The United States Gypsum Company and its subsidiaries reported for the quarter ended March 31, a net profit of $1,141,894 after Federal income taxes based on anticipated increased rates, and other deductions.

The profit is equivalent, after dividend requirements on the preferred stock, to 84 cents each on 1,196,373 shares of common stock. It compares with a revised net profit of $1,266,773, or 94 cents a share on 1,195,662 common shares for the March quarter of last year.

For the twelve months ended with March, the net profit amounted to $6,908,750, or $5.32 a common share, against $7,581,826, on $5.88 a common share for the twelve months to March 31, 1941.

Union Bag Makes Good Report

The Union Bag and Paper Corporation reports for the quarter ended March 31, a consolidated net income of $763,275 after depreciation, interest, provision of $1,430,193 for Federal income taxes and excess profits taxes, etc., equal to 60 cents a capital share.

This compares with adjusted net income of $416,292, or 33 cents a share, for the March, 1941, quarter. Federal income and excess profits taxes for the March, 1941, quarter amounted to $579,080.

For twelve months ended March 31, 1942, net income was $2,515,296, after provision of $4,302,055 for Federal income and excess profits taxes, equal to $1.98 a share, compared with adjusted net income of $2,033,752, or $1.60 a share, for the previous twelve months.

Sales for the first quarter of 1942 amounted to $8,805,452, against $5,003,805 in the first 1941 quarter, an increase of 46.7%. Twelve-month sales totaled $30,672,654, against $23,252,072 before, an increase of 31.9%.

Tax Cuts Oxford's Gains

A sharp increase in gross earnings of the Oxford Paper Company and subsidiaries for the first three months of this year practically was wiped out to provide for anticipated Federal taxes, yet to be determined, President Hugh J. Chisholm announced.

Net earnings jumped $10,818 as compared to the first three months of 1941, the report showed. Gross earnings for the same period increased $805,253, Chisholm said, but were practically nullified by an increase of $794,435 in anticipated Federal taxes.

Earnings before Federal taxes were $1,121,420.27 compared to $316,166.95 for the three months of 1941. Net earnings for the first three months this year were $222,920.27 against $212,101.78 for 1941.

Federal taxes in the first quarter of last year were $104,065.17, the report revealed, while $898,500 has been set aside this year in anticipation of future taxes.

Total net income before depreciation and other expenses was $1,369,077.89, an increase of $814,870.44 over the first quarter of 1941.

The report was sent to all stockholders.

Albemarle Nets $656,600

The Albemarle Paper Manufacturing Company including Halifax Paper Company, Inc. for the year to March 31, reports a net income of $656,600, in contrast to net loss of $68,008 in preceding fiscal year.

Last year was the most successful year in the history of the company, according to a report made to the directors by President F. Dewey Gottwald at the annual meeting. Among the achievements was a 40% increase over 1940 in pulp production, it was reported.

All officers and directors were reelected. Besides Mr. Gottwald, they are Samuel C. Knode, of New York City, and James P. Massie, vice-presidents;

Blair B. Stringfellow, Jr., secretary, and Basil W. Coale, treasurer. Re-elected to the board of directors were John M. Miller, Jr., J. Scott Parrish, Overton Dennis, T. Croxton Gordon, Walter S. Robertson and Messrs. Coale, Massie and Gottwald.

M. & O. Nets $411,779

The Minnesota and Ontario Paper Company for the quarter ended March 31, reports a consolidated net income of $411,779.85.

The following items respecting operations are reported by R. H. M. Robinson, president:

Provision for income and excess profits taxes has been made having regard to the recent recommendations of the Secretary of the Treasury, but such provision may require modification upon the enactment of new tax legislation.

The delivery of the turbo generator for the steam plant addition at International Falls authorized in March, 1941 continues to be held up by the war effort. The balance of the additional facilities have been installed and are in operation.

The power situation is presently satisfactory. The marked deficiency in rainfall since the first of the year has to a moderate extent been overcome by rainfall within the past few days.

Certain-Teed to Expunge Deficit

Certain-Teed Products Corp. dividend payments must await the expungement of the corporation's capital deficit, Bror Dahlberg, chairman, told stockholders at an informal annual meeting at the Hotel Roosevelt recently.

First quarter earnings, Mr. Dahlberg said, approximated $273,000, against $142,000 in the same period of last year. He voiced confidence about the company's future and predicted that operations would be at capacity for the remainder of the year with about 85% of output connected with the war effort.

Lily-Tulip Nets $4.56

The Lily-Tulip Cup Corporation and subsidiaries for the twelve months to March 31, reports a net profit of $865,405, after $1,214,556 provision for Federal income and excess profits taxes, equal to $4.56 each on 189,539 common shares outstanding, compared with $666,879, or $3.51 a share for preceding twelve months when tax provision amounted to $246,181.

N. P. and T. Earns 80 Cents

The National Paper and Type Company and subsidiaries for the six months to February 28, reports a net profit of $212,196, equal, after preferred dividends, to $3.01 each on 64,392 common shares, compared with $70,667, or 80 cents a common share for six months to February 28, 1941.

Southland Nets 13 Cents

The Southland Paper Mills, Inc. for 1941, reports a net profit, as reported to SEC of $248,110, equal, after preferred dividends, to 13 cents each on 225,942 common shares, in contrast to net loss of $182,271 in 1940; net sales, $2,385,815, against $1,461,685.

KEEP YOUR BELTS "FIGHTING" LONGER

Cincinnati Power Transmission and Conveyor Belts are fighting equipment in the battle of production. They are tough . . . they can take it as fast as it is dished out and that means 24 hour stretches . . . but extra care is going to keep them in there "pitching" longer. Conserve this vital equipment . . . help Cincinnati Belts do the biggest job they have ever been called upon to do . . . to help produce many of the essential needs for victory.

Making your Cincinnati Belts last longer is easy. Folders carrying important information have been mailed to thousands of manufacturers throughout the U. S. If you did not receive a copy of these important suggestions, write to us and it will be mailed immediately. Do it now for it may mean making your Cincinnati Belts lasts months or even years longer . . . and that is bad for the Axis.

THE CINCINNATI RUBBER MFG. COMPANY
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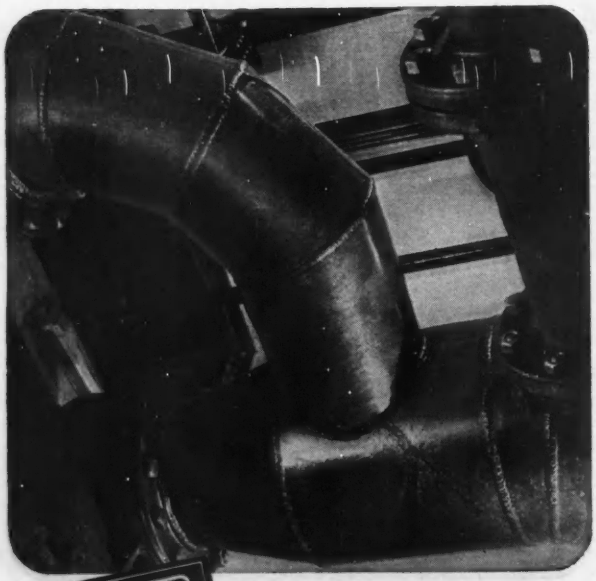
Speed War-Time
PAPER MILL PIPING

Even the most intricate assemblies go in fast and accurately when you use ARMCO Spiral Welded Pipe. This is especially important now whenever maintenance or new lines are needed for war-time production.

ARMCO's method of pre-fabricating pipe means that standard or special fittings are made-to-order and come welded to straight pipe runs. This eliminates a pair of flanges at every bend, reduces weight and saves hours of tedious assembly.

Efficient operation is also assured. ARMCO Pipe is smooth inside for high flow capacity and is easy to keep clean. The fewer flanges mean fewer joints and less chance for leaks. Maintenance is sure to be low.

Learn how ARMCO Spiral Welded Pipe can help speed your important war-time construction. Diameters range from 6 to 36 inches, wall thicknesses from 7/64 to 1/2-inch. Write us regarding your specific piping problems. The American Rolling Mill Company, Pipe Sales Division, 1701 Curtis Street, Middletown, Ohio.



ARMCO
SPIRAL WELDED PIPE

OPA Fixes Prices on Sanitary Goods

WASHINGTON, D. C., May 11, 1942—Maximum prices for sanitary napkins are established in Maximum Price Regulation No. 140, announced today by the Office of Price Administration.

The order, effective May 18, is designed to reduce unwarranted price advances which have already taken place. The regulation which fixes prices at the manufacturing, distribution and retail levels, is expected to result in savings to consumers, based on current prices, of $4,500,000 annually.

Although retail prices are lowered, mark-ups for retailers and distributors remain, under the regulation, about the same as prior to July 1, 1941, after which date retail prices were increased about 25%. The cost and profit study of the industry by OPA indicates that the 12 producing firms will realize adequate returns despite past and current cost increases.

Manufacturers of the two leading brands advanced prices July 1, 1941, and the other manufacturers, who sell at lower prices, followed with proportionate price increases. Again, in December 1941, the manufacturers indicated they intended to advance prices, suspended projected increases at OPA's request. At that time the producers agreed individually to maintain prices at the levels of December 15, 1941 while OPA completed its study of the industry.

Under the regulation, the maximum net return to manufacturers on sales made to wholesalers will be $6.90 per case, a reduction of 62 cents from the current price of the two leading brands but 90 cents more than the same brands sold for prior to July 1, 1941. On sales made directly to retailers the maximum net return of the manufacturer will be $7.31 per standard case (48 packages of 12 napkins each), a reduction of 69 cents per case from current prices and about 75 cents more per case than the return to manufacturers before July 1.

The maximum price a wholesaler now can receive per case of any brand is $1.40, which permits him a return about equal to, or slightly more than that he received before July. If the wholesalers' differential between the leading brands and the other brands is the same as it was July 1, retailers' margins will be slightly better than they were on that date.

As a result of the decrease in price, the largest selling item, the package containing 12 sanitary napkins, is reduced from 25 cents to 22 cents for the consumer. Maximum delivered prices, on a unit basis for all types of packages, are set forth in the regulation as follow:—

Count per package	Manufacturer's price to wholesalers	Wholesaler's price	Retailers' price
1 to 7 incl.	$ .01300	$ .01620	$ .02125
8 to 11 incl.	.01220	.01460	.01900
12	.01198	.01441	.01834
13 to 72 incl.	.01150	.01320	.01670
73 and above	.01100	.01220	.01500

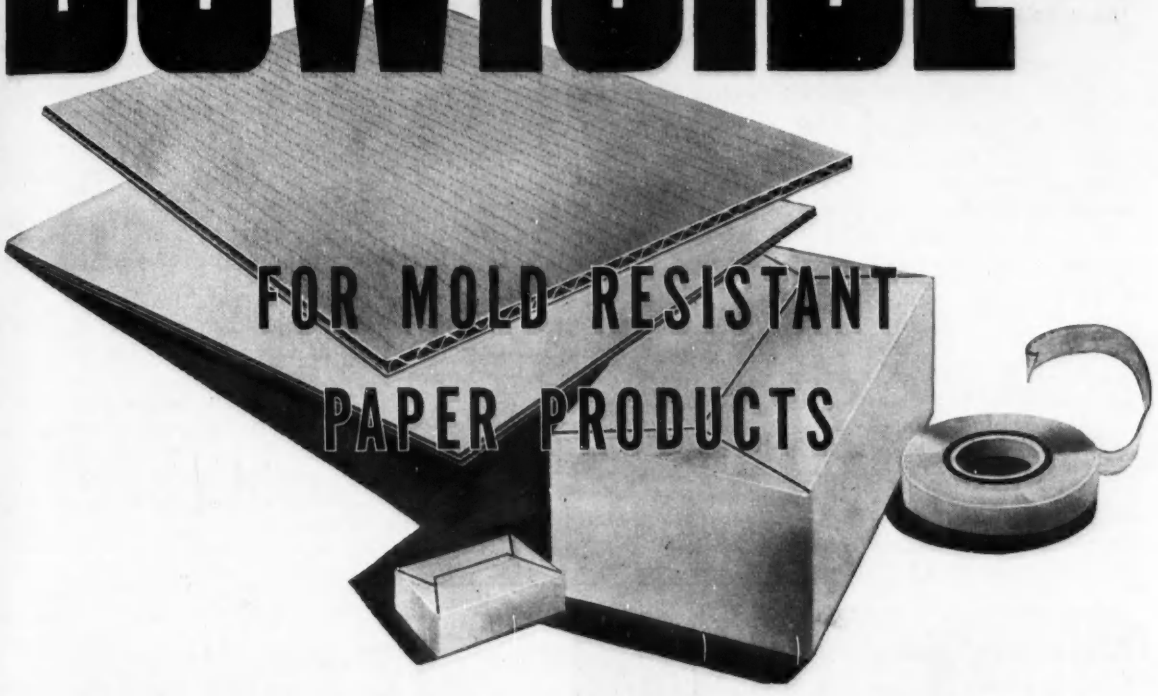
The manufacturer's price to retailers cannot exceed the manufacturer's price to wholesalers by more than 6 percent. The regulation does not cover sanitary napkins when sold in vending machines.

Hammermill Earns $3.11

The Hammermill Paper Company for 1941, reports a net income of $671,401, equal after preferred dividends, to $3.11 each on 180,000 common shares, against $503,972, or $2.18 a common share in 1940.

DOWICIDE

FOR MOLD RESISTANT PAPER PRODUCTS



MANY TYPES of paper products are constantly subjected to conditions which favor mold growth. Such products can be effectively treated by the proper application of certain chlorinated phenols sold under the trade mark Dowicide*.

Corrugated and laminated board are made mold-resistant by treating the stock at the beater or calenders. Egg case fillers and flats have been effectively protected by the application of Dowicide B or G. The mycostatic effect is so pronounced that even on the eggs in these treated containers excellent control of mold is obtained.

Dowicide is equally effective in such diverse applications as soap wrappers, waxed wrappers, coated papers and gummed tape. Numerous other paper products can be made mold-resistant with Dowicide. Write for complete technical information.

DOW

THE DOW CHEMICAL COMPANY, MIDLAND, MICH.
New York, Chicago, St. Louis, San Francisco, Seattle, Los Angeles, Houston

*Trade Mark Reg. U. S. Pat. Off.

Use Dowicide

(1) To control slime conditions.

(2) To prevent stain and decay on pulp logs.

(3) To preserve lap and pulp stock.

(4) To prolong felt life.

(5) For mold-resistant paper products.

(6) To preserve proteins, starches, and other sizing materials.

(7) To reduce maintenance costs.

Boston Merchants Meet with OPA

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 11, 1942—A mass meeting of paper merchants called by the Office of Price Administration to explain the general background and purpose of the general price freezing order, the special orders that were issued simultaneously with it, and the specific application of these orders to the particular group present was held Friday at the Hotel Bradford. Approximately 250 attended, including paper merchants from Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York and Wisconsin.

Walter R. Guild, executive secretary of the New England Paper Merchants Association, in cooperation with the OPA, sent out to members of the trade notices of the meeting.

Albert F. Miller, Chief of the Fine Paper Unit of Paper Distributors' Section OPA, who conducted the meeting, introduced Robert O'Neil, Paper and Paper Products Division, OPA, and Thomas B. Shea, Regional Price Attorney.

Mr. Miller discussed the subject informally, noting that a general freeze was not impracticable, as seen by experience in other countries. A chaotic condition would result if such an action were not taken. Much of his talk was based on the Government publication, "The General Maximum Price Regulation," copies of which were distributed. Mr. Miller discussed and read several important sections of the 30-page pamphlet. He considered "further increases in the cost of living." Sacrifice and team work are necessary, but no sacrifices can equal those made by those at the armed front. Some policing will be necessary. There will be inevitably some hardships, but plans are being perfected to make things equable.

An important point which Mr. Miller brought out was that the voluntary agreements covering kraft papers were superseded by the general price-freezing order.

A question period followed. The questions were written on cards distributed to members of the audience. They were collected by men previously appointed by Robert H. Ziegler, an executive of the National Paper Trade Association of the United States, who were Harry J. Dowd, president of the New England Paper Merchants Association, Floyd H. Blackman (acting in the absence of his brother John F. Blackman), John H. Brewer, Samuel Ginsburg, and F. Bendel Tracy.

The meeting was the first of about 30 to be held all over the country on the same subject.

B. C. Brookes on Bowling Committee

B. C. Brookes, assistant purchasing agent for Minnesota and Ontario Paper Company, Minneapolis, has been named to the executive committee of the American Bowling Congress.

Appointment of Mr. Brookes is in recognition of his efforts in behalf of bowling generally and in line with the Congress policy of securing representation from cities which are bowling centers in their areas. Mr. Brookes is the third representative from the northwest ever to be named to the executive body of ABC.

"NON-USERS ARE THE LOSERS"

PROFIT PRODUCERS

TENAX FELTS

LONGER LASTING FELTS

Rubber is not the only basic material now being rigidly restricted. And whereas a motorist can make tires last longer by speed reduction, the producers of paper and board are called upon to run their machines faster, and produce greater tonnage.

NOW, more than ever, TENAX FELTS are proving their Tenacity and True Value.

"Non-Users Are The Losers"

LOCKPORT FELT COMPANY

Newfane, N. Y. — U.S.A.

Indianapolis Demand Less Active

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., May 11, 1942—Most lines in the paper trade in this area apparently have eased off somewhat, but prices on principal items continue firm to strong. Supplies generally are adequate for the present demand. Bright spots in the market were the good demand for wrapping paper, kraft and container supplies of all kinds.

The fine paper market is feeling the lack of advertising probably to a more acute degree than other lines. Direct by mail advertising, due to many items being scarce or off the market entirely, has sunk to a low level and perhaps will go even lower. Many local printing plants have little work in prospect and naturally their paper demand has declined radically.

Newsprint demand also shows some decline. Papers in this area are becoming somewhat smaller, but local advertising remains fairly good. The big decline has come from the large national advertisers such as automobile, refrigerator and tire manufacturers.

Building paper and roofing also show weakness, but there is a large amount of remodeling being done and due to the fact that this is a heavy defense area, new construction will not be cut as drastically as in some other localities. Most dealers have fair stocks, but they now are buying on a hand to mouth basis, most of their attention being directed to keeping stocks well balanced and inventories as light as possible.

Most of the container plants in this area are working to the capacity of their raw material deliveries. Much of the output now is going for defense purposes but many plants have large government orders and are able to get most of the material they require. Tissues last week were strong. While there was some increase in demand for summer specialties, weather conditions for a couple of weeks have been adverse. It is thought the real summer specialty season will begin immediately after Memorial Day.

Mill demand for old paper was reported fairly good last week but supplies were heavy in this area and prices were none too strong. Rags were in fair demand with prices well held.

Organize for War Production

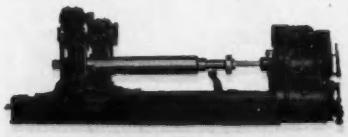
[FROM OUR REGULAR CORRESPONDENT]

OSWEGO, N. Y., May 11, 1942—A meeting of manufacturers wes held here this week for the purpose of forming a war production organization and E. W. Menke, manager of the engineering division of the St. Regis Paper Company, was selected to head the group. He stated that his company has found that converting to war work and the adding of additional shifts is a great job but there was no reason why every plant with machines idle a part of the time cannot increase production. He believes that the sincere cooperation of manufacturers with the organization will result in an increase in production and an accompanying increase in employment beyond all reasonable expectations. A survey is now under way which will list every machine in every plant besides giving full details concerning each.

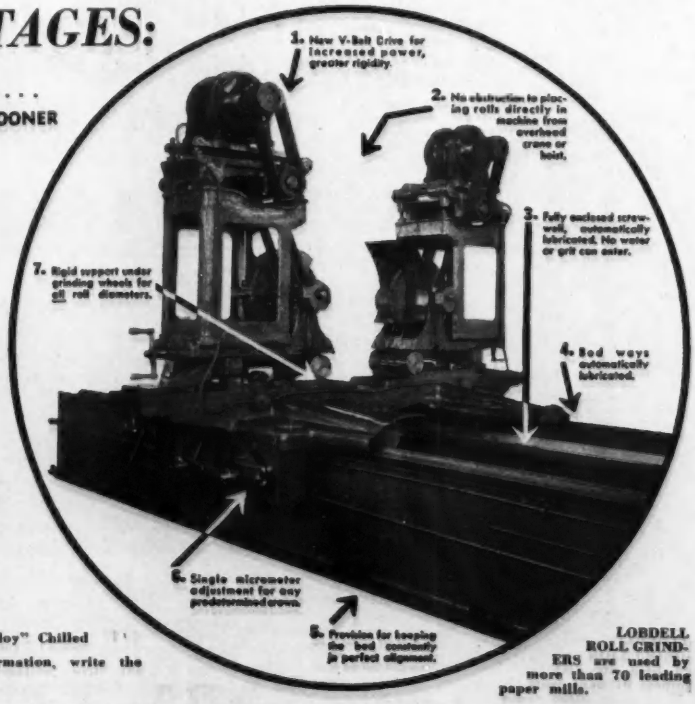
7 BIG ADVANTAGES:

- TO DO A BETTER JOB—FASTER . . .
- GET ROLLS BACK IN SERVICE SOONER

LOBDELL ROLL GRINDERS are substantially proportioned, generously powered, conveniently operated . . . with every modern feature for accurate and rapid grinding. *Ask about their features; no obligation whatsoever.*



LOBDELL
CAR WHEEL COMPANY
WILMINGTON·DELAWARE
— 107 Years in Business —


1. New V-Belt Drive for increased power, greater rigidity.
2. No obstruction to placing rolls directly in machine from overhead crane or hoist.
3. Fully enclosed screw-feed, automatically lubricated. No water or grit can enter.
4. Bed ways automatically lubricated.
5. Provision for keeping the bed constantly in perfect alignment.
6. Single micrometer adjustment for any predetermined crown.
7. Rigid support under grinding wheels for all roll diameters.

LOBDELL ROLL GRINDERS are used by more than 70 leading paper mills.

• Also makers of Lobdell Calender Stacks—Lobdell "Puraloy" Chilled Iron Rolls—Lobdell Micrometer Roll Calipers. For information, write the "Paper Mill Machinery Division".

Pulp Shortage Appears Averted

Pulp shortage which was seriously threatened last year now appears to be averted by a substantial increase in domestic production, coupled with a decrease in exports, according to Ossian Anderson, president, Puget Sound Pulp and Timber Company.

Domestic production of all grades of pulp rose to an estimated 2,757,000 tons in the first three months of 1942, a gain of 17%, or 399,000 tons more than were produced in the record-making first quarter of 1941, Mr. Anderson declared. He also pointed out that since exports for the quarter were 10,700 tons less than in the like period last year, domestic supply available for home use exceeded last year's first quarter figures by 409,700 tons.

First quarter gain in tonnage of all chemical grades of pulp available for domestic consumption was estimated at 350,000 tons, composed of 343,000 tons' increase in production by United States mills, timed with 7,000 decrease in export.

Turning to one of the most acute spots in last year's threatened shortage, Mr. Anderson stated that unbleached sulphite production, totalling 343,000 tons in the first quarter of 1942, was 76,000 tons higher than in the like period of 1941, while exports were 4,000 tons lower, making a total increase of 80,000 tons available to domestic consumers.

"Last year pulp consumption ran far ahead of available new supply, necessitating heavy withdrawals from reserve stocks," Mr. Anderson said. "To meet this situation, the industry expanded its capacity and sought to obtain maximum production from existing facilities. Apparent consumption cannot be closely estimated since current data on changes in inventories are no longer available. However, known facts provide reason for hoping that record production in 1942, forecast by accomplishments thus far, will avert what threatened to become a serious pulp shortage."

Acquires Testing Laboratories

Electrical Testing Laboratories, Inc., has acquired the plant and equipment and has taken over the staff of Electrical Testing Laboratories at 2 East End avenue at 79th street, New York City. The officers of the concern are as follows:—Preston S. Millar, president; F. Malcolm Farmer, vice president and chief engineer; Denis J. Lees, vice president and treasurer; Gordon Thompson, assistant treasurer; Caroline E. Slocum, secretary.

The facilities of ETL, Inc., are exceptionally comprehensive in the electrical field. Extensive facilities also are available for optical, physical, mechanical and chemical laboratory operations. The machine shop of ETL, Inc., is engaged in constructing and maintaining numerous gauges and instruments that are the implements of skilled technical work. Something of the scope of facilities and the range of operations is illustrated by such diverse subjects of investigation as vitamin content of fish oils; hydraulic bursting strength of large cast-iron pipe fittings; durability of playing cards; effectiveness of insect destroyers; color fastness or weather resistance of paints, paper and fabrics; and increasingly a wide variety of activities directed toward assistance in prosecution of the war.

"Replaced Two Pumps Costing Ten Times as Much,"

says Cellufoam Products Division of the Masonite Corporation about the

R & M MOYNO PUMP

Here's Cellufoam's Production Manager, Otto J. Krueger, with his Moyno Pump. Read what he says about it!

"After 3½ years' experience with the R & M Moyno Pump, we are pleased to report that its performance in handling stock for Cellufoam has been very satisfactory.

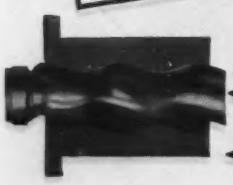
"*It replaced two pumps costing ten times as much, and is doing a far better job.* Maintenance costs have been phenomenally low—and the Moyno is so simple in design that when repairs eventually become necessary, it can be taken down and reassembled in about 30 minutes.

"*Because of our success with it, we think of the Moyno first whenever other tough pumping jobs come up,* and consequently installed a second one recently to pump a supplementary material."

Before installing the R & M Moyno, engineers of the Cellufoam Products Division of the Masonite Corporation were using *two* "special" pumps to handle the 3% Kraft stock used in making their "Cell-U-Blanket" insulation. The two pumps cost TEN TIMES as much as the Moyno, and were necessary so that one could operate while the other was being repaired.

The Moyno, however, not only does this pumping job *better* in every way, but it has cut maintenance costs to an all-time low because of its amazing resistance to wear and its easy accessibility. Also, its smooth, *metered* delivery has helped improve product quality.

Investigate the R & M Moyno Pump! It's self-priming and positive in displacement—handles size, coating and stock without turbulence or cavitation. Write for Folder 1833!



ONLY 1 MOVING PART

Here's the patented principle of the R & M Moyno Pump's amazing performance. A single-threaded helical rotor revolves within a stationary double-threaded helical stator, providing pumping action like that of a piston moving through a cylinder of infinite length.

ROBBINS & MYERS • Inc.

MOYNO PUMP DIVISION SPRINGFIELD, OHIO

HOISTS • CRANES • MOTORS • FANS • FOUNDED 1878

J. A. Perkins Appointed by OPA

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 11, 1942—Appointment of James A. Perkins as associate price executive of the paper and paper products branch of the Office of Price Administration was announced today by Herbert F. Taggert, director of the general products division.

Prior to his appointment, Mr. Perkins served as executive officer of OPA's price division. He is on leave of absence from Princeton University where he is assistant director of the School of Public and International Affairs.

At present he is acting price executive serving in the temporary absence of Robert M. Macy, price executive of the branch, which has under its jurisdiction the price control problems and studies of the woodpulp, paper and paper products fields. At the present time the branch is conducting a series of meetings in many cities for the purpose of explaining the application of the General Maximum Price Regulation to the paper trade.

Asks Bids for Paper Shavings

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 13, 1942—Government Printing Office will receive bids on May 25 for paper shavings, etc., for the fiscal year beginning July 1. It is expected that the following quantities will be available during the fiscal year beginning July 1 and on which bids will be received:—

Paper wrappers from rolls and miscellaneous paper waste, 4,600,000 pounds.

Printed paper waste free from ground wood, 1,000,000 pounds.

White and colored shavings from blanks, 450,000 pounds.

White shavings from books, etc., 900,000 pounds.

White and colored shavings and clean waste, 450,000 pounds.

Newsprint and wood manila shavings, 230,000 pounds.

Postal card bristol trimmings, 350,000 pounds.

Used white monotype keyboard paper in rolls, 80,000 pounds.

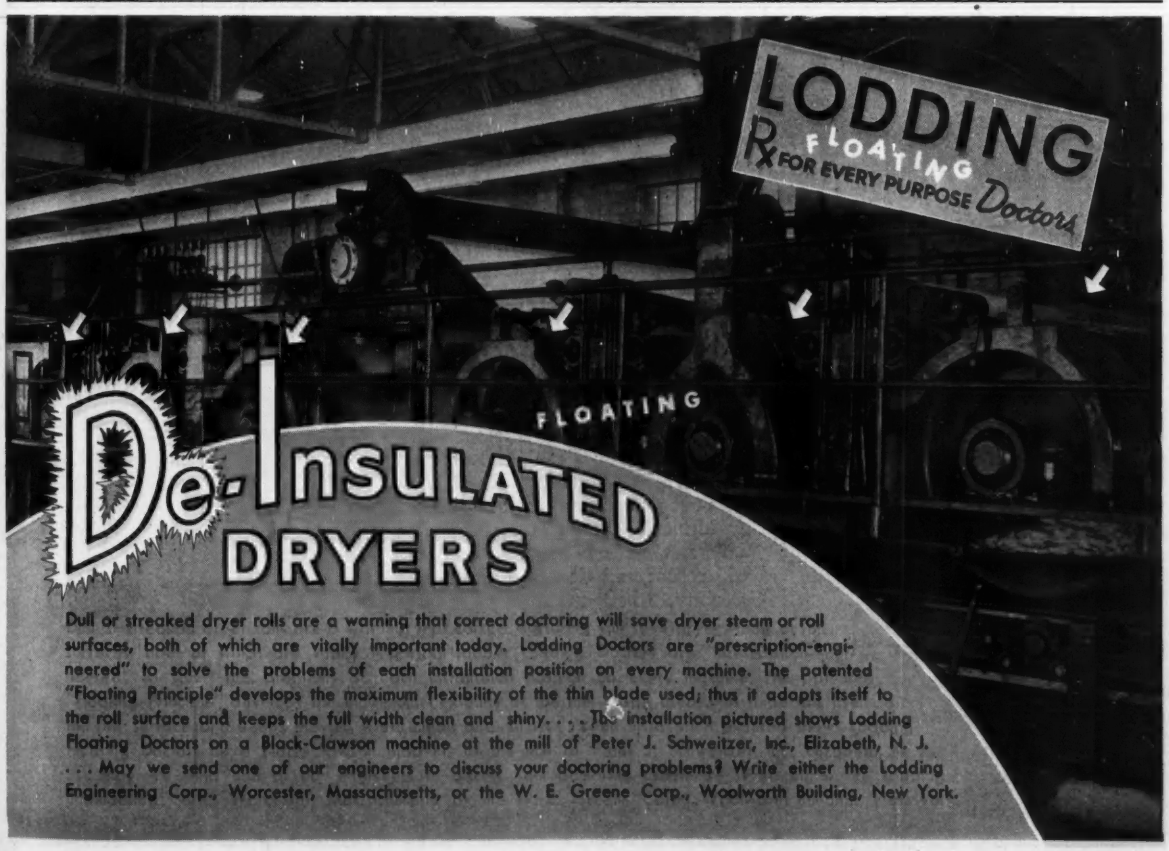
Binders board, strawboard, etc., 350,000 pounds.

Discarded publications, 800,000 pounds.

Paper Mill Profits Hit By Higher Taxes

BOSTON, Mass., May 11, 1942—Full year 1942 earnings of most paper companies will be lower than in 1941 despite prospects of continued capacity operations, says the United Business Service in a special report today. Operating profits in the industry (before taxes) will show a gain over 1941, but will not be sufficient to offset heavier tax burdens. In some cases, this will mean a cut in dividend payments.

Paper, paperboard, and pulp producers are operating at capacity levels, and will continue to be busy for the duration of the war. Both industrial and government demand are heavy, and paper products will be used increasingly as substitutes for metal containers.


LODDING
FLOATING
Rx FOR EVERY PURPOSE Doctors
FLOATING
De-Insulated
DRYERS
Dull or streaked dryer rolls are a warning that correct doctoring will save dryer steam or roll surfaces, both of which are vitally important today. Lodding Doctors are "prescription-engineered" to solve the problems of each installation position on every machine. The patented "Floating Principle" develops the maximum flexibility of the thin blade used; thus it adapts itself to the roll surface and keeps the full width clean and shiny. . . . The installation pictured shows Lodding Floating Doctors on a Black-Clawson machine at the mill of Peter J. Schweitzer, Inc., Elizabeth, N. J. . . . May we send one of our engineers to discuss your doctoring problems? Write either the Lodding Engineering Corp., Worcester, Massachusetts, or the W. E. Greene Corp., Woolworth Building, New York.

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 13, 1942—The Government Printing Office has received the following bids for 17,588 pounds of 22½ x 28½ white cloth lined paper: Stanford Paper Company, $113.98 per M sheets; Mudge Paper Company, $113.98; Barton, Duer & Koch Paper Company, $113.98; Whitaker Paper Company, $113.98; Central Ohio Paper Company, $117.75; Garrett - Buchanan Company, $117.40; Middlesex Products Corp., $109.70 and $115.85; Bradner Smith & Co., $113.98; Wilcox-Walter-Furlong Paper Company, $110.00; Paper Corporation of U. S., $116.42; Coy Hunt & So., $116.25; and D. L. Ward Company, $117.00.

For 492,000 pounds of 6 x 13½ chipboard: Continental Paper Company, 2.375 cents; Whitaker Paper Company, 3.275 cents; Bartgis Bros. Company, 2.9 cents; Mathers-Lamm Paper Company, 2.68 cents; R. P. Andrews Paper Company, 2.63 cents; Mudge Paper Company, 3.238 cents; Old Dominion Paper Company, 3.3 cents; Consolidated Paper Company, 3.3 cents; Resolute Paper Products Corporation, 2.499 cents; Virginia Paper Company, 3.2065 cents; Cauthorne Paper Company, 2.3998 cents; Stanford Paper Company 3.3425 cents; Container Corporation of America, 2.75 cents; and Birmingham & Prosser Company, 2.615 cents.

For 492,800 pounds of 42 x 58 poster: Bradner Smith & Co., 7.4 cents; D. L. Ward Company, 7.12 cents; R. P. Andrews Paper Company, 6.98 and 7.35 cents; Mudge Paper Company, 6.52 cents; Paper Corp. of U. S., 6.65 cents; Marquette Paper Company, 6.6 cents; Stanford Paper Company, 6.58 cents; Coy Hunt & Company, 7.13 cents; Wilcox-Walter-Furlong Company, 7.8 cents (100,000 pounds only); Garrett-Buchanan Company, 7.8 cents (200,000 pounds only); Central Paper Company of Ohio, 6.38 cents; Newton Falls Paper Mill, 6.49 cents; and Birmingham & Prosser Company, 6.48 cents.

For 2,000 rolls of gummed No. 2 kraft paper in 3 inch rolls: Whitaker Paper Company, 36 cents per roll; Paper Corporation of U. S., 42.75 cents; Brown Bridge Mills, Inc., 43.50 cents less 1%; Nashua Package Sealing Company, 35.7 cents; Old Dominion Paper Company, 37.37 cents; Andrews Paper Company, 49.3 cents less 2%; Ginsburg Brothers, Inc., 45.5 cents; Union Paper and Twine Company, 42 cents less 2%; R. P. Andrews Paper Company, 44.83 cents; Barton, Duer & Koch Paper Company, 45 cents; Birmingham & Prosser Company, 47.78 cents; and Stanford Paper Company, 44.89 cents.

For 129,450 pounds of 50% rag, 36 x 54 white lithograph chart paper: Paper Corp. of U. S., 14.9 cents; Collins Manufacturing Company, 14.0 cents; Franklin Research Company, 12.125 cents; R. P. Andrews Paper Company, 18 cents; Coy Hunt & Company, 17.88 cents; Walker Goulard Plehn Company, 16.23 cents; and Central Ohio Paper Company, 16.50 cents.

For 9,600 pounds of 100% rag, 38 x 48 cream white antique book paper: Barton, Duer & Koch Paper Company, 25.25 cents; R. P. Andrews Paper Company, 20.79 cents; Mudge Paper Company, 32 cents; Paper Corporation of U. S., 21.5 cents; Marquette Paper Company, 18 cents; Mathers-Lamm Paper Company, 33.5 cents; Bradner Smith & Company, 21.5 cents; Collins Manufacturing Company, 26 cents; Coy Hunt & Co., 23.01 cents; and Wilcox-Walter-Furlong Paper Company, 20 cents.

For 59,406 pounds of 34 x 44 white offset book paper: R. P. Andrews Paper Company, 8.2 cents; Whitaker Paper Company, 7.47 cents; Stanford Paper Company, 7.5 cents; Walker Goulard Plehn Company, 6.97 cents; Paper Corp. of U. S., 7.3 cents; and Bulkley, Dunton & Co., 6.60 cents.

For 102,300 sheets of 22⅛ x 34½ white cloth lined paper: Stanford Paper Company, $109.20 per M sheets; Mudge Paper Company, $109.20; Barton, Duer & Koch Paper Company, $109.20; Whitaker Paper Company, $109.20; Mathers-Lamm Paper Company, $118.00; Baxter Paper Company, $117.30; Butler Company, $113.94; Wilcox-Walter-Furlong Paper Company, $110.00; Middlesex Products Corporation, $109.70 and $115.85; Garrett-Buchanan Company, $117.39; Central Ohio Paper Company, $117.40; and Paper Corporation of U. S., $114.25.

For 43,200 pounds of 21 x 32 white sulphite writing paper: Mudge Paper Company, 7-18 cents; R. P. Andrews Paper Company, 7.27 cents; Barton Duer & Koch Paper Company, 7.29 cents; Birmingham & Prosser Company, 7 cents; Coy, Hunt & Co., 7.05 cents; Cauthorne Paper Company, 7.51 cents; Graham Paper Company, 8.9 cents; Stanford Paper Company, 6.69 cents; Paper Corporation of U. S., 8.1 cents; Wilcox-Walter-Furlong Paper Company, 7.3 cents; Marquette Paper Company, 6.82 cents; Central Ohio Paper Company, 7.18 cents; Eastern Corporation, 7.6 cents; Tobey Fine Paper, Inc., 7.27 cents; Walker Goulard Plehn Company, 7.02 cents; Whitaker Paper Company, 7.12 cents; and D. L. Ward Company, 7.27 cents.

LaMotte Service to the Paper Industry

ph Control—Boiler Feed Water Control Chlorine Control

Standard routine tests developed by LaMotte Research Department Promote Better Control of Processes.

pH Control
in the Beaters
in the Sizing
in Filling, Coating and Coloring
in eliminating Deposition of Pitch on wires, rolls and felts
in White water recovery
in Quality of Mill Water Supply
in Finished Paper

Chlorine Control
in Treating Mill Water Supply, etc.

Boiler Feed Water Control
Simplified Outfits for Controlling Treated Water or in Analyzing Untreated Water for:
Total Alkalinity, Chlorides, Dissolved Oxygen, Hardness, Phosphates, pH, Sulphates, etc.

Send for further information.

LaMotte Chemical Products Co.
The Pioneers in the Practical Application of pH Control
Dept. PT Towson, Baltimore, Md.

Lease Almy Mill

The city commissioners of Lambertville, N. J. have approved the Mayor's action in negotiating a lease between the city and Union Mills Paper Manufacturing Company, of New Hope, Pa., for the building known as the Almy Paper Mill, for storage purposes.

Newfoundland Exports

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 1, 1942—Paper exports from Newfoundland for the fiscal year ending June 30, 1941 continued to show a slight increase in tonnage, although the value shows a decrease over the previous year according to a report to the Department of Commerce.

All exports are made by two mills, one at Corner Brook and the other at Grand Falls. The total tonnage was 331,897 in the fiscal year 1941 as compared with 346,124 in the fiscal year 1940. The declared value of these shipments was $14,119,921 in 1941 as compared with $15,303,958 in 1940. A partial report by calendar years has been received from each company.

The Bowater's Newfoundland Pulp and Paper Mills, Ltd., at Corner Brook, reports production for the calendar year 1941 of 168,488 short tons of mechanical pulp, as against 167,414 tons in 1940, and 62,602 tons of unbleached sulphite as against 44,686 in 1940. The company reports that 25,105 tons of unbleached sulphite were produced for export in 1941, against 9,877 tons in 1940. The company operated at full capacity throughout the year, production constituting a new record. The new sulphite mill, designed to produce in excess of 100 tons of sulphite per day, was opened on March 24, 1941.

The Anglo-Newfoundland Development Company at Grand Falls reports estimated production of 153,000 short tons of newsprint as compared with 159,684 in 1940; 19,000 tons of dry baled sulphite compared with 16,212 tons in 1940; and 10,000 dry tons baled groundwood compared with 68 tons in 1940; and 4,000 tons of No. 1 ground wood logs as compared with 2,700 tons in 1940.

Morale and Production

In many war production enterprises throughout the country, scientific management, without adding materially to equipment or manpower, has helped record increases in production ranging from 20 to 80 per cent.

This fact is brought out in a booklet entitled "More Production, Better Morale," just issued by The Bedaux Company, Incorporated, production engineering firm, of which Albert Ramond is president.

Basing himself on scientific Time and Motion studies, today's production engineer also takes under scrutiny such matters as the proper planning and scheduling of operations, job evaluation and classification, plant layout, training of supervisors and workers, control of maintenance and repair operations, and control of costs.

In applying these techniques, the Bedaux statement points out, it is essential to enlist the workers' collaboration. Says the booklet: "Open and frank procedures and full explanation of all practices assure full cooperation of supervisors and workers. Labor participation is stimulated by assigning experienced workers to make the studies of operations."

Pointing to examples of successful management-labor cooperation, the booklet says: "These principles are being applied successfully in both union and non-union enterprises in some of the country's largest industries."

TRADE AUTOMATIC MARK

Manufacturers for Over Thirty Years

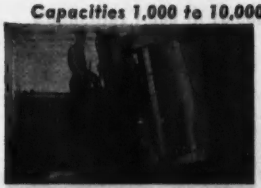
MODERN Electric Propelled INDUSTRIAL TRUCKS

FOR ECONOMICAL MATERIALS HANDLING

- LOW AND HIGH LIFT TRUCKS
- FORK TRUCKS
- PULP AND BALE HANDLERS
- PAPER ROLL HANDLERS
- LOAD CARRIERS
- TRACTORS — CRANES

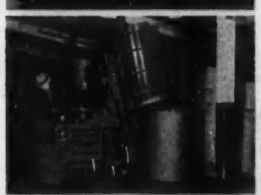
Capacities 1,000 to 10,000 Lbs.

Heavy-duty, center-control fork trucks—telescopic tilting, tiering type for low-cost roll storage and transportation. Capacities 3000 to 6000 lbs.



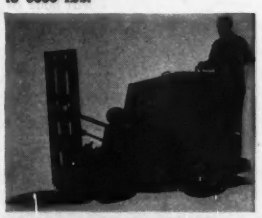
☆ Center-Control 3000 to 6000 lb. capacity motorized revolving paper roll handlers.

☆ Center-Control 6000 to 7000 lb. capacity heavy-duty, motorized revolving paper roll handlers.



☆ Box-car bale and roll unloader for single tier storage. 1500 to 2500 lbs.

☆ Box-cars can be loaded and unloaded in record time — with motorized roll upender. Capacities up to 3000 lbs.



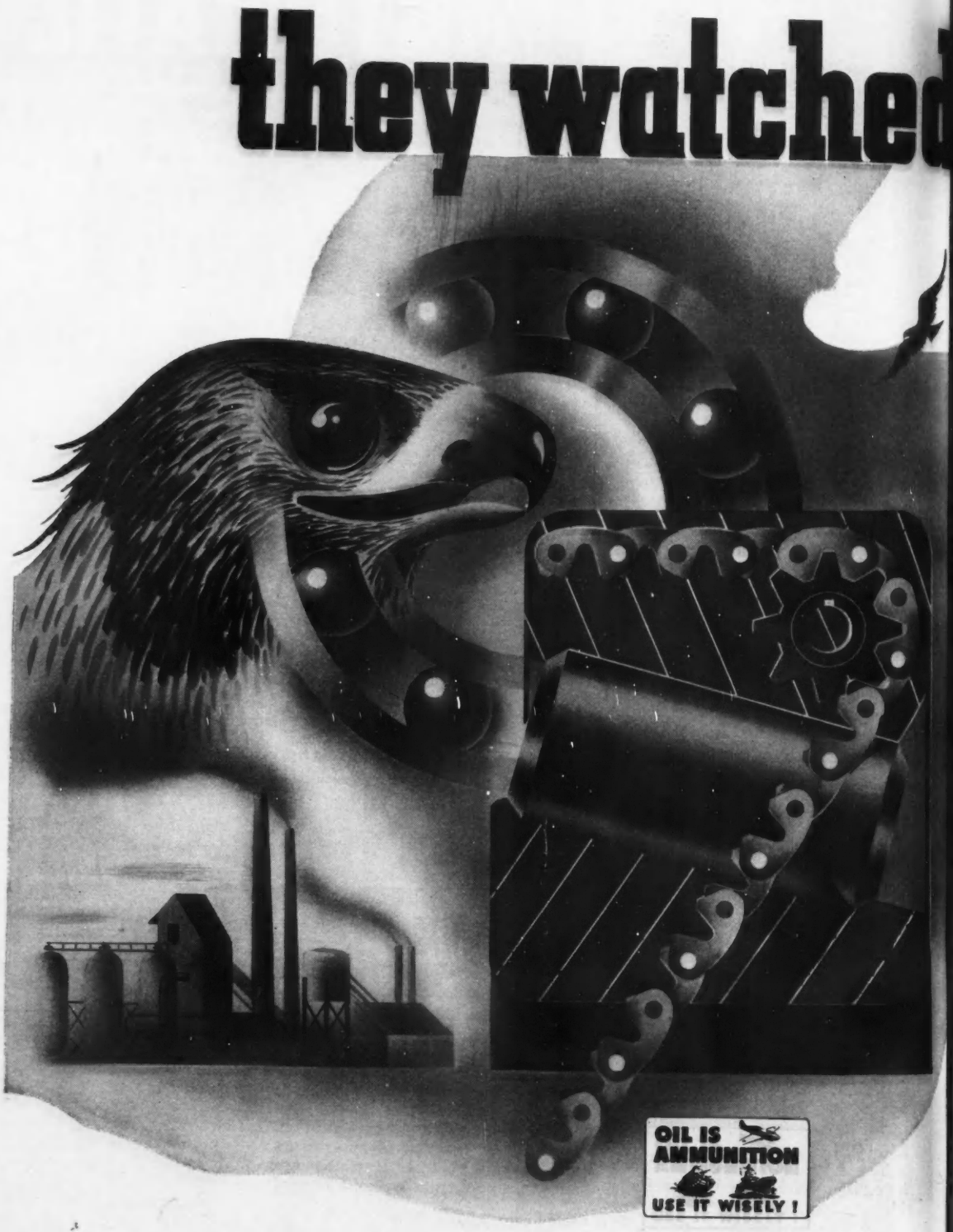
☆ Chisel type pulp handlers for box-car loading, unloading and stacking.

☆ 6000 lb. capacity low-lift and high-lift trucks for skid transportation of small rolls and flat stock.

WHEN YOU BUY TRUCKS · · Buy "AUTOMATIC"

AUTOMATIC TRANSPORTATION CO.

65 W. 87th St. Div. of the Yale & Towne Mfg. Co. CHICAGO, ILL.


they watched
OIL IS AMMUNITION
USE IT WISELY !

their bearings

"like a hawk"

until they switched to Tycol Green Cast Grease

This manufacturer had been experiencing numerous difficulties with the grease previously used on his centrifugal boiler pumps and the bearings on his chain stokers. On the advice of a Tide Water engineer they switched to Tycol Green Cast Grease. Since then the nuisance of having to keep an eagle eye on the grease job has been eliminated. Now they just put in Tycol Green Cast Grease and forget it. One less item to worry about — the grease stays put and does an economical and dependable job of lubricating.

Tycol Green Cast Grease can effect economies in your plant, too, because this modern grease is made from a paraffine base cylinder oil combined with a minimum of soap. More oil — less soap — means better lubrication.

Let a Tide Water engineer show you where and how improved lubrication can step up production. Write the Tide Water Associated Oil Company, 17 Battery Place, New York, N. Y. Assistance is freely offered.

DRUMS! DRUMS! DRUMS! DRUMS!
War needs make it extremely important that all empty drums be returned immediately.

INDUSTRIAL TYCOL OILS-GREASES

TIDE WATER ASSOCIATED OIL COMPANY EASTERN DIVISION 17 Battery Place, New York

Regional Offices: Boston, Philadelphia, Pittsburgh, Charlotte, N. C.

MAKERS OF THE FAMOUS VEEDOL MOTOR OIL

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger
EDITOR

Vol. 114 May 14, 1942 No. 20

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION. Twenty-third Annual Convention, Pantlind Hotel, Grand Rapids, Mich., June 16-18.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Statler Hotel, Boston, Mass., September 30-October 1.

POST-WAR PROSPERITY

The immediate effect of the war and the unparalleled war effort the United States is making for undoubted victory, will be a period of hardship for most Americans. In a statement of considerations involved in the issuance of the General Price Regulation, the Office of Price Administration referred to this aspect of the American economic situation in part as follows: "This Regulation does not insure that the standard of living of any individual or group or of the Nation as a whole will remain unimpaired. The loss of overseas supplies and the conversion of domestic manpower and facilities to war production make this impossible. The material standard of living of the American people will fall. But this Regulation does help to protect the Nation against inflationary maladjustments as between different people and classes of people. And it does help insure that scarce goods will be allotted on a basis of equality."

Despite the war's adverse effect on America's living standards, the post-war interdependence of nations will trend to lift the standard of living for mankind throughout the world, Henry H. Heimann, executive manager of the National Association of Credit Men, declared on May 11 in his keynote address, "Credit for the Duration—and After", before the 47th annual Credit Congress of the National Association of Credit Men. With this prediction, Mr. Heimann cautioned the 1,500 credit and financial executives from 44 states in attendance, that "we must not overlook the fact that those nations which are best able to produce will make the greatest contribution. It will need the combined efforts of productive ability and credit facilities to bring to the world a realization of just what the better way of life means."

Commenting on the important contribution which credit will make, Mr. Heimann said that, "The course of credit parallels the progress of civilization. Let us therefore have the courage to use our credit judiciously once the struggle has ended. Let us bring relief to the suffering abroad. It will be bread cast upon the waters, for it will return to the world an appreciation of the things that are noble and good, things that follow the doctrine of the Man who preached a message of brotherly love that has survived through all the ages. Let us thoroughly understand, as we could never understand in any peacetime period, that all of the material resources of the world are of no value unless they are used for the purpose of contributing to a better way of life. The exception to this must necessarily be their contribution to the struggle to maintain our ideal of a better way of life. If we have this vision before us, and if we have the courage to put into effect these credit policies, then it can be truly said that the likelihood of a long peaceful era is a quite reasonable expectation."

One of the very important home front economic battles that we have faced, Mr. Heimann said is that of rising price structures to the point of serious inflation. Declaring that all must sacrifice, he pointed out that, "It is idle to speak of control of inflationary forces if we approach our program in a cowardly fashion. This war entails sacrifice, not for the other fellow, but for you and me, for every living human being. No segment of our people, irrespective of their political strength or their bellicose attitude, or their blustering demands, should escape this sacrifice, nor can they escape it if we are to be successful. A price control program cannot work in three spheres if it leaves a fourth uncovered. It cannot apply to the middle class and miss the wage earner, the farmer, or the extremely wealthy. Limitations of profits are part of limitations of wages. Limitations of food costs and rationing are part of a controlled economy."

Declaring that we do not wish these unnatural restrictions in eras of peace, Mr. Heimann said that, "We recognize they violate sound economic laws, but so does war. And even the most conservative must be ready to acquiesce in some measure of violation of economic laws in the interest of defending our economic system. Hence we must stand back of a price control program, constantly correct its weaknesses, and courageously make it all-inclusive. This is no period for the permanent accumulation of capital. I do not mean to suggest that it is no period for thrift. Savings were never more essential. But those savings in the end, at best, can only restore the purchasing power that a rising price structure has liquidated. In addition, they must be dedicated for use during a readjustment period. We are face to face with the proposition of not only saving our way of life, but also of saving our life's savings. Whatever

accumulation has been the reward of thrift and of industry should be defended at all costs. Unless we do defend it and are willing to make sacrifices, how can our heart and soul be in the military struggle?"

In reference to equity as an essential factor, Mr. Heimann said in part: "Convince the American people that the burden is equally distributed according to their ability and they will meet any call for sacrifice. This will follow, whether the sacrifice takes the form of heavier tax bills, restricted use of peacetime goods, savings programs or physical effort.

In conclusion, Mr. Heimann said that, "We in the credit fraternity have a very definite and important part to play in trying to bring stability to these programs. We must have the courage to play our part. If we see that credit is to be restricted in open accounts, we can only object in case we see that the restrictions will not accomplish the objective, namely, curtailment of purchasing so that more goods will be available for the war effort and more manpower devoted to armaments. We cannot in this period argue about dictatorial fine-points because, facing dictators on the field of battle, our democratic way must be flexible enough to permit, for a limited period of time, the use of sterner policies and practices. And if we join in these efforts and accept these hardships, then we have the right to demand a return to the peaceful way of life we have known."

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1942		Corresponding Weeks, 1941	
March 28	103.2	March 29	94.5
April 4	101.3	April 5	93.5
April 11	99.4	April 12	95.0
April 18	100.5	April 19	94.0
April 25	99.9	April 26	97.8
May 2 (Prelim.)	*99.2*	May 3	99.8

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1941	85.6	89.7	92.2	96.0	98.7	99.3	94.2
1942	103.8	103.4	102.7	*99.9*	...	...	...

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1941	101.0	99.7	105.2	106.2	100.4	97.4
1942	...	...	...	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941	1942
Year to Date..	68.1	77.4	89.6	67.5	80.2	85.3	88.9	*102.4*
Year Average.	69.9	80.4	79.8	71.5	83.4	85.6	97.4	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

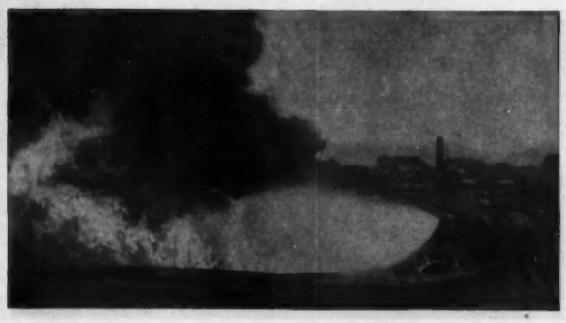
PAPERBOARD OPERATING RATIOS†

Revised

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1937	83	89	89	91	88	80	69	77	72	70	57	47	75
1938	56	63	63	60	60	59	59	69	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	82	77	78
1941	81	88	89	89	*91	94	92	98	95	99	98	90	92
1942	102	101	101	*93*	..	..	..	..	..	..	..	..	..

Week ending Mar. 28, 1942—101
Week ending Apr. 4, 1942—100
Week ending Apr. 11, 1942— 93
Week ending Apr. 18, 1942—94
Week ending Apr. 25, 1942—93
Week ending May 2, 1942—90

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.



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Modern sizing methods and materials for improved water resistant qualities in paper and paper boards

NATURE OF SIZING. Microscopic studies show that sizing is accomplished by the deposition of fine particles of rosin on the surfaces of fibres and the degree of water resistance depends on the number of particles and the evenness of their distribution. Both experimental and commercial experience also proves that the effectiveness of a size depends on its degree of water repellence which is indicated by measurement of the angle of contact made by a drop of water with the active raw material in the size. The superiority of paraffin wax (contact angle 110°) over rosin (contact angle 66°) in this respect has long been known, but its introduction into paper was delayed by the difficulty in preparing the wax so that it could be deposited on the fibres evenly and in fine particles.

DEVELOPMENT OF WAX EMULSIONS. For years Cyanamid research chemists and field technicians have been working on the problem of developing the best emulsifying methods, evaluating various raw materials and working out the best methods of procedure in the paper mill to secure these four cardinal virtues: fine particles, good retention, even distribution and high water repellence. As a result, Cyanamid has developed a group of products which is giving superior water resistant qualities to a wide variety of paper and paper board products, with safe paper machine operation, even facilitating production in some cases.

PAPER MILL SIZING PROCEDURES. Water resistance is best secured by the addition of both rosin and wax in the course of stuff preparation although this may be supplemented by a surface application of a wax emulsion which serves to improve the smoothness of the paper as well as its water resistance. Combining the proper proportions of rosin and wax and choosing the best type of emulsification for both calls for consideration of many factors if the required degree of sizing is to be obtained and if, at the same time, the other essential characteristics of the sheet are to be preserved. These factors include character of supply water, type of fibres, use requirements of the finished product, and the like. Experienced Cyanamid men both in the field and in the laboratory are interested in your problems and will be glad to assist you in choosing the best methods and materials for attaining maximum water resistance of your products.

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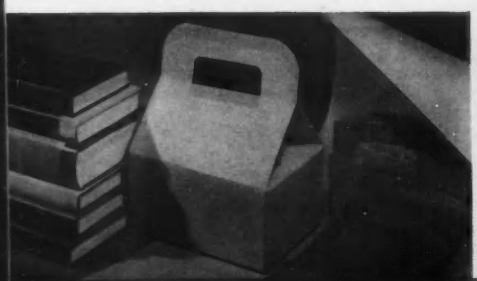

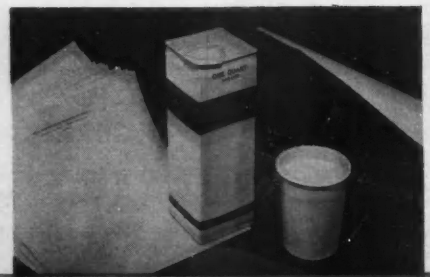

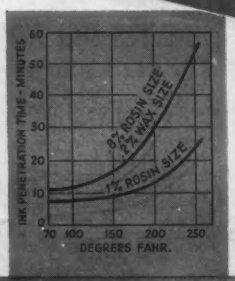

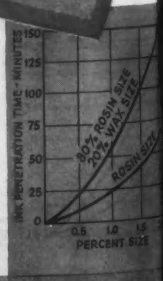

Water resistance is required in a majority of papers and paper boards mainly because of the possibility of accidental contact with water such as book papers, box boards,

Other papers are specifically manufactured for contact with aqueous liquids such as writing papers, milk bottle boards and caps, fibre can stock, drinking cup, hanging

Sizing tests of papers sized with rosin and papers sized with a combination of rosin and wax, under varying drying temperatures in one case and per cent size in the other. Curves show increased sizing obtained by use of wax size.

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Wire and Felt Sides of Paper*

TAPPI Suggested Method T 455 sm-42

The wire side of paper is the side that was in contact with the wire of the paper machine; the other side is termed the felt side. It is desirable to have means of distinguishing between the two sides because they generally differ in some physical characteristics. It is not always possible to make the distinction, this being particularly true of coated and other surface-treated papers, certain high-grade papers made from well beaten rag stock, and specialties made with variations in the usual paper-machine practice. When one of the following procedures does not give a definite indication it is advisable to try one of or both the other procedures.

Procedures

1. Fold over a sheet of the paper and observe the relative smoothness of the two sides. Often the pattern of diamond-shaped impressions of the machine wire can be seen, thus identifying the wire side. In viewing the paper, it should be held in a horizontal position with the light striking it at an angle of about 45 degrees and with the line of vision of the eye also at an angle of 45 degrees to the surface of the paper. Observation with a microscope is helpful.

2. Dip the paper in water or in a weak caustic soda solution, drain off the excess liquid, allow to stand a few minutes, and again examine the two sides. This treatment tends to restore to paper the texture it had on the machine wire. View as described in 1.

3. Hold a sheet of paper in one hand in such a way that the grain (machine) direction is parallel to the line of vision and the sheet surface is approximately horizontal. Holding the sheet in this position with one hand, pull upward with the other to start a tear in the sheet so that the line of tear follows the grain of the paper. As the tear is being made, gradually guide it so that it moves in the cross direction and toward the outer edge of the sheet, producing a tear line following a curved path. Turn the sheet over so that the opposite side is uppermost and make a similar tear in the sheet. Observe the feathering caused by the splitting of the sheet at the edge of the two tears which have been made. One of these tears will show a distinct feather edge as compared to the other, especially in the curved portion where the line of tear departs from the grain or machine direction and moves toward the cross direction. The tear with the more feathered edge is always made when the wire side of the sheet faces upwards.

This procedure is very useful as it often gives a positive determination when the other simpler procedures fail. The successful use of it, however, requires a certain amount of experience and it is recommended that such experience be gained by applying it to papers of known wire side and felt side.

* This method is suggested by the Paper Testing Committee as being the most suitable to date for its purpose. It is not, however, a TAPPI Standard. Criticisms of it are earnestly suggested and should be sent promptly to the Secretary, Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York City, N. Y.

Delaware TAPPI to Hold Dinner-Dance

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry will hold its annual dinner-dance program at the Bala Country Club, Belmont and City Avenues, Bala (Philadelphia), Pa. on Friday, June 5, 1942.

The golf course of the Club will be open to Members of TAPPI and guests from 12:00 noon.

Dinner will be served in the clubhouse at 6:30 P.M. and dancing will follow with music by Lenoir's Orchestra from the Barnegat Yacht Club.

The committee in charge of arrangements consists of the following: Chairman: Harry Hulmes, c/o U. S. Rubber Company, 5th & Locust streets, Philadelphia; Frank McAndrews, c/o Glassine Paper Company, Main & Levering streets, Philadelphia; Allan Boyd, "Huyck Felts," Wyncotte, Pa.; Edward Poor, W. C. Hamilton & Sons, Miquon, Pa.; Walter Quinn, Container Corporation, Manayunk, Philadelphia, Pa.; John Davis, Dill & Collins Incorporated, Philadelphia, Pa.

Reservations should be made promptly with Frank McAndrews of the Glassine Paper Company, Main and Levering streets, Philadelphia, Pa.

Chemical Dictionary

A handy chemical dictionary of 85 pages compiled by F. H. Campbell, D.Sc., F.A.C.I., has just been published by the Chemical Publishing Company, Inc., 234 King street, Brooklyn, N. Y., at $2.50 a copy.

Although the terms are briefly treated, the compiler has succeeded admirably in clearly presenting nearly 1,000 terms which chemists commonly use and frequently refer to. The compactness of the book makes it convenient to have at hand and it should save considerable time for many persons who have occasion to use a chemical dictionary.

Straw for Industrial Use, Collection Problems and Quality*

By E. C. Lathrop[1] and J. H. Shollenberger[2]

Abstract

The suitability, availability, and geographical location of cereal straws for industrial use are discussed. Physical and chemical analyses of the various parts of wheat straw showed that the less valuable portions of the straw from the standpoint of pulping are the chaff, the heads, and the leaf blades, while the most valuable portions are the stems. Different varieties of straw vary considerably in the proportion of stems to chaff, heads, and leaf blades. Physical and chemical examination of combine-harvested straw and stubble after 35 days' weathering in the field showed practically no loss in valuable constituents for pulping purposes.

Present-day methods of harvesting and collecting straw are described and their costs and economics in comparison with those of older methods of using farm stack straw are discussed. It is shown that on a $6.00 delivered price for farm stack straw about $1.00 of the cost is represented by the chaff. Chaff is almost entirely eliminated by the use of combine-harvested straw and the use of such straw should, therefore, bring about a saving in pulping operations. Recent improvements in harvesting methods and equipment, including pick-up balers, indicate possible savings of approximately $1.00 per ton in straw collection. Based on the use of straw of lower chaff content, lower collection costs due to better methods, and decrease in transportation costs, a scheme is suggested that will enable both the farmer and the pulp mill operator to receive benefits of approximately $1.50 each per ton of straw and still maintain the price of delivered straw at $6.00 per ton.

Numerous questions have arisen regarding the use of straw as a raw material for supplementing wood in meeting a cellulose shortage. The fact that straw has not been used in this country, excepting for paperboard manufacture, is based to a considerable extent on economic considerations. Straw is being used increasingly in Europe for paper manufacture under war conditions. One mill in England *(1)* which hitherto used wood pulp and esparto is now using 400 tons of straw per week, replacing all the esparto and part of the wood pulp.

Three important questions deserve answers in any reconsideration of cereal straws as a source for cellulose pulps, (a) availability, (b) quality, and (c) methods and costs of collection.

In 1940, before the Northern Regional Research Laboratory[3] was ready for occupancy, the authors began to put into effect the broad plans prepared by the Bureau of Agriculture Chemistry and Engineering for commercial development of agricultural residues by (a) making a survey of the present industrial uses and availability of straws, (b) by collection of authentic samples of straws from distinct varieties of wheat for complete physical and chemical analyses, and (c) by institution of cooperative studies with agricultural equipment manufacturers and state agricultural experiment stations to develop improved machines and methods for more economical collection of residues on the farm in a cleaner and more desirable commercial condition.

Availability and Distribution

The principal areas in which the cereal straws, wheat, rye, barley, and rice and flax straw are grown in considerable acreage and where the straw is not used entirely on the farm, as in the dairy districts of Wisconsin, are shown in Fig. 1. Oat straw is not discussed because it is more valuable than the other straws for feeding and bedding purposes and is not so suitable as a source of cellulose because of its high leaf content. An estimate is given in Table I of the tonnage of straw produced in the United States, the part of this available for use off the farm, and the tonnage used by industry. The estimated production of straw is based on the average production of grain. It is difficult to obtain a definite off-the-farm estimate for these straws, because, in addition to some large industrial uses, there are many local uses to which straw is put. These local uses support custom balers or baling machines used on the farm and widen the experience in straw collection and handling.

The largest industrial use of straw (6 to 7 hundred thousand tons), mainly wheat straw, is for the manufacture of corrugating strawboard. Because of unanticipated straw requirements, at least during the past two years, such straw has contained a certain amount of oat straw. Ordinarily strawboard manufacturers do not want oat straw, claiming that it gives an inferior product and a lower yield. Some strawboard mills will not accept more than a small percentage of oat straw and deduct for the amount present. Operators of straw paperboard mills state that rye straw is probably slightly superior to wheat straw for producing a stiff corrugating paperboard, while neither barley nor oat straw is desirable.

Attention should be called to the greatly increased use of seed-flax straw by the new and thriving American cigarette paper manufacturers. This use of a special fiber to produce a special result in papermaking, not produced by wood fibers, points to a logical use of other cereal straw fibers for cellulose purposes, namely, for specialty papers. The seed-flax straw, generally cut by a binder-harvester, shocked, threshed, and baled from the stack, must be shipped to tow mills to remove the woody portion or shive from the bast fiber or tow. The shive constitutes about 80%

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* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 16-19, 1942.

[1] Member TAPPI; Chief, Agricultural Residues Division, Northern Regional Research Laboratory, Peoria, Ill.

[2] Chief, Commodity Development Division, Northern Regional Research Laboratory, Peoria, Ill.

[3] The Northern Regional Research Laboratory is one of four regional laboratories authorized by Congress in the Agricultural Adjustment Act of 1938 for the purpose of conducting research to develop new uses and outlets for agricultural commodities. These laboratories are administered by the Bureau of Agricultural Chemistry and Engineering of the U. S. Department of Agriculture.

TABLE I.—CEREAL AND FLAX STRAWS[1]: THEIR PRODUCTION AND AVAILABILITY FOR INDUSTRIAL UTILIZATION

Kind	1941 Grain production, bushels	Straw to grain ratio[2]	Straw: Over-all production, tons	Straw: Portion which can be used advantageously on the farm[3], %	Straw: Portion available for use off-the-farm, tons	Estimated portion now used by industry
Wheat	945,937,000	1.9:1	53,918,409	25	40,438,807	
Rye	45,191,000	2.5:1	3,163,370	25	2,372,528	1,000,000[3]
Barley	358,709,000	1.2:1	10,330,819	25	7,748,115	
Rice	54,028,000	[4]	1,561,679	25[5]	1,171,257	60,000
Flax	31,485,000	4:1	3,526,320[6]	..	2,821,056[6]	200,000
Totals	.....	....	72,500,597	..	54,551,763	1,260,000

[1] Oats straw is not included. It is more valuable for feed and bedding on the farm and less desirable for cellulose purposes.
[2] Data from U. S. Department of Agriculture processed report of October, 1935, entitled "Preliminary Estimates of Farm Products, By-Products, and Wastes Available for Industrial Use".
[3] Roughly estimated at seven hundred thousand tons used by the straw board industry, 50,000 tons in highway construction and soil erosion prevention work, and 250,000 tons for packing, chicken litter, and off-the-farm bedding purposes.
[4] A ratio of 1.1:1 was used for California and Louisiana rice production and one of 1.5:1, for Arkansas and Texas production.
[5] Includes also inaccessible straw.
[6] Consisting of approximately 20% bast fiber and 80% shives.

and the tow 20% of the straw. The tow, which is the only portion used in cigarette papermaking, is baled and shipped to the eastern seaboard. The tow from fiber-flax processing may be used for cigarette paper manufacture. With increasing flaxseed production due to the war, larger tonnages of seed-flax straw will be available. Improvement of methods and lowering of costs of collection may be expected.

Many attempts have been made to utilize the flax shive, so far without any outstanding success. To this problem we are giving attention.

This past season there has been an increased industrial movement of rice straw, particularly into the insulating board industry.

It will be noted from Table I that while about one million tons of straws find an industrial outlet, mainly in the manufacture of cellulose products, many times as much is available. While the mulching methods of water and soil conservation which have recently been developed will undoubtedly widen the use for these cereal straws on the farm in some regions, we can confidently expect a tremendous potential raw material reservoir, annually replenished, of such cellulosic raw materials. With increased farm production consequent to war conditions these supplies will increase. England, Germany, Russia, and others of the war-ridden nations have turned to straw and other residues to assist them in their cellulose economy.

Physical and Chemical Properties of Straw

Thus far most of the chemical and physical studies on straw have been undertaken either from the standpoint of feeding or fertilizer value. Most of published analyses are of little value to the cellulose technologist. As a part of the broad program to develop commercial uses for agricultural residues, there is presented in Table II a physical analysis of the component parts of a number of outstanding varieties of wheat straw, barley straw, and rye straw. The physical examination not only of other straws, but of other crop residues, such as cornstalks, corncobs, etc., is under way at the Northern Regional Research Laboratory.

An examination of the data in Table II shows that there is considerable difference in physical make-up

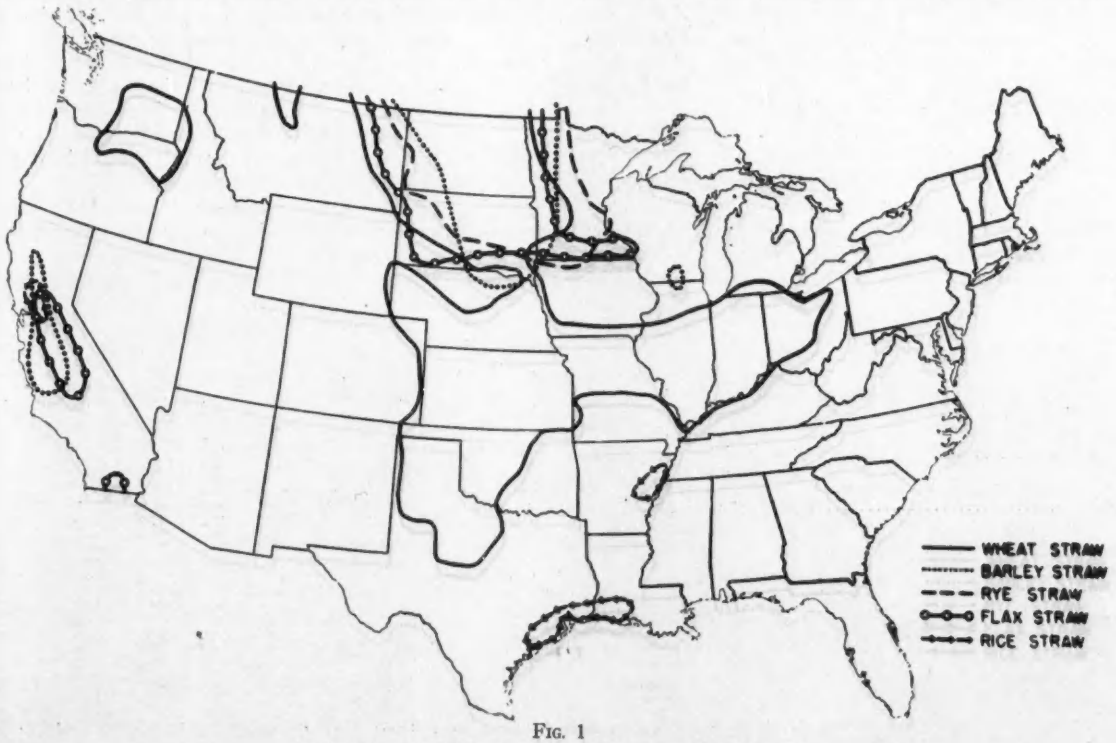

FIG. 1
Principal Areas in Which Cereal Straws Are Available Off the Farm

among the straw varieties. The most desirable part of the straw for cellulose manufacture is the stem. The least desirable portion is the chaff, with the leaf blade as a close second. There is a wide variation in the percentage of these three components among the wheat straw samples. Sweeping conclusions cannot be drawn from these data, but it is evident that this type of analysis will be important in locating the best sources of raw material. Rye straw is shown to have a larger percentage of stem and less blades than wheat or barley, which is in accord with the current belief that rye is superior to wheat for board manufacture.

In Table III is presented a comprehensive chemical analysis of the various component parts of straw Sample 11 of Table II. These data bring out very clearly the undesirable character of the chaff, with its high ash content, most of which is composed of silica, its relatively high water-solubility, high alkali-solubility, high nitrogen content, and its low holocellulose and alpha-cellulose contents. The leaf blades run a close second to chaff from the standpoint of undesirability for pulping purposes. In both the chaff and the leaf blades the fiber length is much smaller than in the stem. These parts of the plant have the least commercial value for pulping and complicate the pulping problem by their consumption of chemicals and by their low retention in the board or paper with consequent contribution of fine fiber to mill effluents. The composition of the stem indicates that it is by far the best cellulose source. The leaf sheath is so closely attached to the stem that no mechanical separation is practicable.

It will be noted that while the nodes are quite high in ash, they are low in silica. The higher ash content of the node as compared with the internode results in a lower alpha-cellulose or holocellulose content by the former. The chemical composition of wheat straw as shown by the data in Table III may vary in other straw varieties. As time permits, a series of commercial varieties of straw will be analyzed to determine their value as cellulose to industry, looking toward improvement in industrial quality by known methods of plant selection and genetics.

Effect of Method of Harvesting and Collection on Quality of Straw

Until recent years all industrial straw has been secured by baling from straw ricks or stacks, the straw having been harvested by the binder method which ordinarily leaves a stubble of four to six inches in the field. In threshing the grain, the chaff and fine material in the thresher is separated from the coarse straw, but in domestic threshing machines these fractions are recombined so that the farm-stack straw contains both coarse straw and chaff. Attachments are available, however, whereby the straw and chaff can be collected separately. European practice separates the chaff for use in stock feeding. It will be seen from the analyses given in Table III that the chaff and blades are both fairly high in nitrogen and in water-soluble material and, consequently, are of value as feeding material. As a rule material having food value has fertilizer value.

In general, the straw paperboard mills have depended on custom balers to bale straw from the farm stack. An advantage in stack straw is that the straw can be baled on the farm during the off season when

TABLE II.—STRUCTURAL COMPOSITION OF MATURE UNTHRESHED WHEAT, RYE, AND BARLEY STRAW CUT BY HAND (GRAIN EXCLUDED)

Sample	Variety	Source	Stems (culms), %	Leaves: Blades, %	Leaves: Sheaths, %	Chaff[1], %	Approx. height of cutting, inches	Length of cut straw[2], inches
WHEAT STRAW								
1	Kawvale ...	Ill.	52.6	11.9	19.0	16.5	2.5	44.6
11	Russian (Hardy Northern)..	Ill.	54.6	11.4	18.1	15.9	2.5	38.7
4	Purkof	Ind.	54.6	10.6	18.2	16.6	2.5	38.7
67	Trumbull ..	Ohio	59.4	12.5	21.9	6.2	1	50.9
69	Fulhio	Ohio	54.8	10.4	20.5	14.3	1	44.8
78	Kharkof ...	Kan.	47.6	9.9	22.2	20.3	[3]	29.8
82	Tenmarq ...	Kan.	49.6	7.4	20.0	23.0	[3]	28.0
84	Blackhull ..	Kan.	50.6	8.1	23.5	17.8	[3]	29.8
401	Federation .	Wash.	38.3	7.1	21.1	33.5	6	18.7
403	Rex	Wash.	54.0	13.5	17.0	15.5	10	38.2
406	Baart	Wash.	44.1	4.9	19.1	31.9	6	26.7
	Average ..		50.9	9.8	20.1	19.2	...	35.4
BARLEY STRAW								
651	Missouri Early Beardless .	Mo.	55.7	12.2	26.4	5.7	[3]	32.0
914	Wisconsin Pedigree 38	Wis.	47.9	10.6	23.2	18.3	[3]	29.4
916	Peatland ...	Wis.	52.9	10.9	22.5	13.7	[3]	30.9
	Average ..		52.2	11.2	24.0	12.6	...	30.7
RYE STRAW								
386	Rosen	Mich.	62.3	5.3	18.8	13.6	3.5	53.2

[1] Chaff includes threshed heads (rachises), hulls (glumes), beards (awns), and small pieces of stems and leaves.
[2] Not available but probably 2 to 2.5 inches.
[3] Average of 50 plants selected at random from each sample.

TABLE III.—CHEMICAL ANALYSIS OF COMPONENTS OF WHEAT STRAW
(Percentage by weight, moisture-free basis)

Component	Production of whole straw, %	Ash, %	Silica, %	Hot water soluble, %	1% NaOH soluble, %	Alcohol-Benzene soluble, %	Pentosans, %	Lignin ash-free, %	Nitrogen, %	C. and B. cellulose ash-free, %	Holocellulose ash-free, %	Alpha-cellulose ash-free (from holo), %	Methoxyl, %
Straw[1]	100.00	7.43	5.33	11.7	44.0	7.2	29.4	14.2	0.34	54.5	68.8	40.7	3.13
Stems (culms)[2]:	54.65	3.91	2.24	9.1	38.6	6.8	29.5	16.7	0.22	57.2	73.4	43.9	3.88
1st (top) internodes	3.80	4.06	2.51	12.2	43.2	8.7	29.7	15.3	0.35	54.6	70.3	39.7	3.54
2nd internodes	10.86	3.43	1.97	7.7	37.5	5.8	29.7	17.1	0.16	58.7	75.7	45.6	3.97
3rd internodes	17.17	3.55	2.46	5.9	34.3	4.9	29.2	17.5	0.10	60.8	75.4	47.4	4.08
4th internodes	16.08	3.63	2.62	5.9	33.0	5.2	30.0	17.8	0.10	60.4	75.6	48.2	4.26
Internodes, unclassified	3.05	Assumed similar in composition to other internodes											
Nodes	3.69	7.60	1.11	15.7	42.5	8.2	30.6	17.1	0.38	46.0	68.4	39.9	4.07
Blades	11.39	10.28	7.38	18.8	53.1	10.2	23.4	9.6	0.93	49.0	59.0	36.0	1.59
Sheaths	18.05	9.08	5.77	14.0	47.9	7.0	31.8	12.6	0.26	53.2	66.1	38.8	2.66
Chaff[2]:	15.91	15.62	14.01	12.8	51.9	6.9	30.9	10.7	0.41	50.7	63.3	35.4	2.22
Beards (awns)	4.22	19.65	18.46	11.7	53.0	6.8	29.2	7.8	0.33	53.6	63.9	37.1	1.58
Hulls (glumes)	9.25	16.44	14.83	13.8	52.1	6.8	30.5	11.0	0.43	48.0	60.7	33.1	2.23
Unthreshed heads (rachises)	2.44	5.57	3.23	10.9	49.4	7.6	35.4	14.9	0.50	56.0	72.4	41.0	3.29

[1] Whole straw, Sample 11, Russian (Hardy Northern) variety from Patterson farm, Hanna City, Illinois, cut by hand before threshing. Cut about 2.5 inches above the ground.
[2] Calculated from parts.

there is not so much demand on farm labor for more important work. The moisture content, particularly of straw baled from the farm stack during the wet winter months, is a most variable quantity. While experienced straw buyers can judge fairly well the quantity of water in baled straw and make weight deductions accordingly, this item of variable moisture content of straw is one of the most serious obstacles in obtaining chemical control during the cooking operation. Storage in the farm stack causes an uncontrollable amount of change in the straw due to weathering; therefore, when the matter of quality, is left in the hands of the custom baler, whose object is naturally one of maximum profit, close control of quality, such as is obtained in many parts of the wood pulp industry, cannot be attained. Due to fire hazards straw paperboard mills do not like to store more baled straw on their property than is necessary to maintain supplies to insure continuous operation.

With the advent of power machinery on the farm the methods of harvesting cereal grains have undergone profound changes. The use of the combine harvester started first on the Pacific coast and has steadily moved eastward. On the west coast there is little use for straw either on or off the farm, and the combine harvester, therefore, has been operated on the plan of merely heading the grain and spreading the straw and chaff over the stubble. As smaller acreages began to be encountered in the eastern wheat growing states, farm equipment manufacturers successfully built smaller, lighter, and lower-cost combine harvesters which, not only successfully harvested cereal grain, but also such diverse crops as soybeans, alfalfa, clover, flax, millet, and vegetable garden seeds. The utility of these machines has become much greater than that of the binder harvester.

A few years ago certain operators of straw paperboard mills became fearful of insufficient straw procurement with this change in agricultural practice and endeavored to interest some of the farm-equipment companies in the development of pick-up baling machinery for the economic collection of straw on those farms where the combine harvester was being used. Such little interest was shown at that time, due to the small number of balers required, that a group of the straw paperboard companies themselves undertook and have succeeded in the development of a good pick-up baler; this is now being marketed. The interest of the farm-equipment industry has since become active in the development and manufacture of suitable light pick-up baling machinery.

In our survey, many mills were found opposed to the use of combine harvested straw. Western mills were most friendly to its use and the eastern mills least friendly. This was due to the fact that the advent of the combine in Ohio followed by some years its entry into Illinois and Indiana and, therefore, less attention to the quality of the straw and to the methods of collection had been given in the more easterly states. Certain mills claimed that the effects of sun and rain on the combine straw left in the field for a week or so before mowing the stubble and baling caused it to be sunburned, deteriorated by molding, more brittle, and of general lower quality than normal farm-stack straw. Some mills believed properly secured combine straw to be superior to farm-stack straw. There seemed to be no good way to answer these questions except by direct experimental procedure. Consequently, two farms in the vicinity of Peoria, Ill., and a farm in the vicinity of some of the large straw paperboard mills in western Indiana were selected as areas to collect combine straw samples undergoing weathering changes.

In using the combine harvester it is possible to mow the grain at different heights from the ground. Naturally with the longer stem the percentage of chaff and heads lessens. In a recent symposium on straw collection, methods, and costs, Mayer *(2)* presented data given in Table IV, showing the percentage of straw collectable and available when cut at different heights of stubble. As will be shown, it is practicable, at least under certain conditions, with the use of the combine harvester to cut to a stubble of six inches. This is possibly as low as the straw should be cut to keep it comparatively free from dirt.

Table V shows the physical analysis of straw samples in relation to the effects of weathering. Because of the large number of chemical determinations necessary, only one sample of combine straw, (Sample 11, Table II) collected on the Patterson farm, Hanna City, Ill., was analyzed chemically after different pe-

TABLE IV.—PROPORTION OF WHEAT STRAW AVAILABLE WHEN CUT AT DIFFERENT HEIGHTS OF STUBBLE[1]

Stubble height, inches	Field 1 %	Field 2 %	Field 3 %
0	100.0	100.0	100.0
6	71.6	79.5	79.5
8	65.8	71.8	71.7
10	58.6	64.8	64.5
12	51.2	57.8	57.2
14	45.2	51.3	50.6
16	39.2	44.7	44.2
18	33.8	39.7	38.6
20	28.0	34.7	33.6
22	23.6	29.2	28.6
24	19.6	24.6	23.6

[1] Data by I. D. Mayer, Purdue University, Lafayette, Indiana.
Note: Height of straw ranged from approximately 20 to 42 inches.

TABLE V.—EFFECT OF THE LENGTH OF TIME LEFT IN FIELD[1] AFTER HARVEST ON THE PERCENTAGE AND PHYSICAL CONDITION OF THE STEMS, LEAF BLADES, AND LEAF SHEATHS IN WHEAT STRAW
(Percentages based on straw as cut including chaff and unthreshed grain)

Sample	No. of days left in field	Stems %	Stems Condition[2]	Leaf Blades %	Leaf Blades Condition[2]	Leaf Sheaths %	Leaf Sheaths Condition[2]
COMBINE STRAW							
Purkof Variety—Woodward farm, Farmersburg, Indiana							
5	0	61.6	BC	8.3	SW	15.1	BC
17	10	57.2	BC	10.3	MW	18.9	SW
22	15	57.0	SW	9.3	BW	18.5	MW
Russian (Hardy Northern) Variety—Patterson farm, Hanna City, Illinois							
12	0	61.0	BC	8.8	SW	14.9	BC
20	12	69.1	BC	9.0	BW	13.9	SW
23	26	69.4	SW	7.1	BW	16.1	MW
30	36	68.8	SW	7.2	BW	15.2	MW
Kawvale Variety—McDonald farm, Hanna City, Illinois							
2	0	66.5	BC	6.2	SW	16.6	BC
9	3	56.8	BC	8.4	SW	19.8	BC
18	15	67.8	BC	7.8	MW	16.1	SW
STUBBLE STRAW							
Purkof Variety—Woodward farm, Farmersburg, Indiana							
6	0	65.5	BC	11.3	SW	21.4	BC
Russian (Hardy Northern) Variety—Patterson farm, Hanna City, Illinois							
13	0	65.8	BC	11.8	SW	20.0	BC
21	12	67.0	BC	11.4	SW	20.5	BC
24	26	70.0	SW	8.0	MW	21.4	SW
31	36	71.6	SW	6.8	BW	21.2	MW
Kawvale Variety—McDonald farm, Hanna City, Illinois							
3	0	64.7	BC	11.2	SW	21.7	BC
10	3	64.0	BC	11.3	SW	22.5	BC
19	15	65.6	BC	10.5	MW	23.0	SW
25	29	72.7	SW	4.1	BW	22.5	MW

[1] Rainfall occurring during time straw was left in field:
Purkof variety, Woodward farm—heavy rain 2 days after harvest, light rains 6, 12, and 13 days after harvest.
Russian (Hardy Northern) variety, Patterson farm—½ inch of rain 20 days after harvest, ¼ inch of rain 21 days after harvest, and ¼ inch of rain 25 days after harvest.
Kawvale variety, McDonald farm—½ inch of rain 23 days after harvest, ¼ inch of rain 24 days after harvest, and ¼ inch of rain 28 days after harvest.

[2] Explanation of symbols used in denoting condition as affected by weathering:
BC—Bright and clean
SW—Slightly weathered
MW—Moderately weathered
BW—Badly weathered

TABLE VI.—EFFECT OF LENGTH OF TIME LEFT IN FIELD AFTER HARVEST ON THE PHYSICAL PROPERTIES AND CHEMICAL COMPOSITION OF COMBINE STRAW [1]

Sample	Component and days left in field	Physical Properties: Portion of whole straw, %	Physical Properties: Condition [3]	Chemical Analysis: Ash, %	Silica, %	Hot water soluble, %	1% NaOH soluble, %	Alcohol-benzene soluble, %	Pentosans, %	Lignin ash-free, %	Nitrogen, %	C and B cellulose ash-free, %	Holocellulose ash-free, %	Alpha-cellulose ash-free (from holo), %
	Whole straw [2]													
20	12	100.0	...	6.06	3.49	10.7	41.7	5.6	28.1	16.2	.45	53.7	69.7	44.1
23	26	100.0	...	5.08	3.41	8.4	42.4	3.2	29.5	16.5	.36	55.3	69.5	43.5
30	36	100.0	...	5.51	4.11	7.2	40.1	3.2	28.2	16.5	.37	55.6	67.9	43.3
	Stems													
20	12	69.6	BC	4.56	2.29	8.8	38.7	5.2	28.3	17.5	.30	55.1	72.1	46.2
23	26	70.0	SW	3.37	2.04	6.7	37.7	2.5	30.0	17.9	.24	56.4	71.4	45.1
30	36	69.3	SW	3.77	2.65	5.5	37.0	2.4	28.3	17.8	.24	56.8	69.5	45.0
	Blades													
20	12	9.1	BW	10.66	6.82	19.2	52.3	8.9	21.3	11.1	1.29	49.5	59.3	37.4
23	26	7.2	BW	11.12	8.01	17.9	51.0	8.8	19.9	11.0	1.19	48.7	55.5	34.5
30	36	7.3	BW	12.42	9.40	14.3	51.4	8.5	19.5	12.7	1.19	47.6	57.2	35.0
	Sheaths													
20	12	14.0	SW	9.18	5.94	13.4	47.5	4.7	30.6	14.0	.51	50.4	67.4	40.4
23	26	16.2	MW	8.46	6.33	10.6	56.9	3.8	31.4	13.8	.37	53.8	68.6	41.2
30	36	15.3	MW	8.53	6.80	10.1	45.3	3.3	31.3	13.9	.40	54.3	66.0	41.1

[1] Russian (Hardy Northern) variety from Patterson farm, Hanna City, Illinois.
[2] Computed from analysis of components.
[3] Explanation of symbols used in denoting condition as affected by weathering: BC—Bright and clean SW—Slightly weathered MW—Moderately weathered BW—Badly weathered

riods of weathering, as shown in Table VI. One-half inch of rain fell 20 days after the harvest; one-fourth inch 21 days after; and one-fourth inch 25 days after. In Table VII a similar analysis of stubble straw is given, it having been suggested by some of the mills that when rain collected in the open ends of the stubble decomposition in the cut-internode took place. An examination of these three tables indicates that there was little physical loss of material except in the leaf blades; this was borne out by the visual signs of weathering and by the chemical analyses.

Referring to the chemical analyses it is to be noted that losses took place particularly in the hot water-soluble and alcohol-benzene-soluble portions of practically all parts of the combine straw and the stubble. In general, there was a loss in nitrogen. Changes in the more important constituents, such as alpha-cellulose, holocellulose, and lignin, appear to be rather slight or negligible. Any losses that have resulted in the leaf blades probably are beneficial rather than otherwise from the standpoint of using straw as a raw material source of cellulose. From this study it is evident that no serious damage has taken place under these conditions in the straw during a period of 36 days' exposure to the elements. Satisfactory pulp has been prepared from this straw in the laboratory pilot plant.

It is obvious that fields containing large amounts of weeds, particularly green weeds, are not suitable for producing straw for cellulose. Experience has shown that straw left by a combine should be collected promptly enough after harvesting so that weed growth in the stubble to be cut does not seriously contaminate the straw. Such weeds respond to other than optimum cooking conditions for straw and when baled green act as focal points for decomposition and heating in the bale.

Methods and Costs of Collection

Straw Costs to Mill

In normal times, straw in 70- to 80-pound bales f.o.b. mill varies in cost from $5.00 to $7.50 per ton, depending on a variety of local conditions. In 1940, when the war situation dried up pulp imports, unanticipated straw demands brought mill costs for winter and spring straw to $8.00 or $8.50 a ton. A delivered price of about $6.00 per ton for farm-stack straw is said to assure profitable operation in an efficient mill in normal times.

Practically all straw is purchased from custom balers and only in a few cases do mills deal directly with farmers. Mills dealing directly with farmers do so because they are trying to pay the farmer a better price, or to assure the farmer of payment for the straw, so as to secure a sustained supply. Some custom balers are said, because of financial instability, to have failed to live up to their contracts with farmers. While collection of straw by custom balers may be the most practical collection channel, financial transactions between the farmer and the mill would

TABLE VII.—EFFECT OF LENGTH OF TIME LEFT IN FIELD AFTER HARVEST ON THE PHYSICAL PROPERTIES AND CHEMICAL COMPOSITION OF STUBBLE STRAW [1]

Sample	Component and days left in field	Physical Properties: Portion of whole straw, %	Physical Properties: Condition [3]	Chemical Analysis: Ash, %	Silica, %	Hot water soluble, %	1% NaOH soluble, %	Alcohol-benzene soluble, %	Pentosans, %	Lignin ash-free, %	Nitrogen, %	C and B cellulose ash-free, %	Holocellulose ash-free, %	Alpha-cellulose ash-free (from holo), %
	Whole straw [2]													
21	12	100.00	.	5.90	4.03	8.4	39.0	5.2	28.9	16.8	.25	54.8	71.1	47.3
24	26	100.00	...	5.71	4.15	7.0	37.7	3.3	28.7	16.6	.20	56.2	68.9	45.1
31	36	100.00	...	5.41	4.09	6.7	37.6	3.2	28.2	16.7	.20	56.3	68.2	44.1
	Stems													
21	12	67.17	BC	4.04	2.49	6.2	33.7	5.2	28.4	19.1	.14	56.0	73.7	50.2
24	26	70.03	SW	4.14	2.71	5.5	33.4	2.8	28.6	18.5	.13	57.9	70.7	46.9
31	36	71.65	SW	3.68	2.55	5.2	33.4	2.8	28.0	18.8	.13	58.0	70.3	46.0
	Blades													
21	12	11.43	SW	11.92	9.00	16.3	54.6	8.1	24.3	10.3	.91	54.3	65.5	42.5
24	26	8.06	MW	11.38	9.16	11.2	49.0	7.3	21.4	9.4	.75	55.1	61.6	40.8
31	36	6.75	BW	12.80	10.49	11.6	50.7	7.0	20.5	9.2	.72	50.3	59.8	36.6
	Sheaths													
21	12	20.58	BC	8.57	6.20	11.0	47.4	3.9	32.8	13.2	.26	51.6	66.2	40.9
24	26	21.43	SW	8.65	6.90	10.3	47.7	3.4	32.1	12.6	.25	52.0	66.0	40.9
31	36	21.20	MW	8.81	7.19	10.5	47.8	3.5	31.1	12.0	.27	52.6	64.7	40.3

[1] Russian (Hardy Northern) variety from Patterson farm, Hanna City, Illinois.
[2] Computed from analysis of components.
[3] Explanation of symbols used in denoting condition as affected by weathering: BC—Bright and clean SW—Slightly weathered MW—Moderately weathered BW—Badly weathered

appear to be a sound step in assuring stability of sustained straw supply sources.

Straw Prices to Farmer

The farmer normally receives from $0.75 to $1.00 or slightly more per ton for straw in the farm stack or as standing stubble, depending on local conditions. This return is evidently too low to interest the farmer to any large extent. Due to competition between straw paperboard and kraft paper in the corrugating paperboard market, the former cannot afford to pay increased prices for straw. It is evident that if the farmer is to obtain a greater return, it must result from improved and lower-cost methods of collection and lower transportation costs. Recent developments show progress in this direction and improvements in straw quality as well.

Transportation Costs

During the past ten or twelve years the radius from which mills have gathered straw has approximately doubled, owing to a decrease in straw availability. There are probably three reasons for this decrease in straw availability: (a) restricted acreage under government control of wheat production and soil conservation measures; (b) failures of farmers to receive sufficient return for farm-stack straw to keep them much interested in this industrial outlet; and (c) the advent of the combine harvester, particularly the small combine, in the states of Ohio, Indiana, Illinois, and Iowa.

Transportation of straw from the farm to the mill by truck is the general method. This permits delivery direct to the mill stack and eliminates one hauling operation as compared with railroad transportation—*viz.*, hauling from the railroad car to the storage pile. In 1940, average trucking charges were $2.50 a ton; some mills with short hauls paid as little as $1.00 and others unfavorably located paid as high as $4.00. This high hauling charge in perhaps most areas could be reduced if farmers nearer the mill could be more interested in supplying straw. The mill operator without paying more for delivered straw would gain in stability of operation by finding a way, let us say, to pay the farmers $1.00 more per ton of straw in that radius of $1.50 transportation cost. This situation could be brought about by inaugurating an aggressive campaign on the part of the mill to increase financial business relations between the farmers and the mill. The custom baler channel could still be maintained by contracting with the custom baler to collect straw at a fixed price from farms on which the mill has contracted straw purchases. There is a possibility that farmers' cooperative associations would undertake custom baling. Such a move would place the purchase price to the farmer for stack or stubble straw in the hands of the straw paperboard mill rather than as is general now, in the hands of the custom baler.

Baling Costs

The cost of baling from the farmers' stack by the stationary baler was found to average about $2.00 a ton, to which must be added about $0.50 a ton profit to the custom baler. If straw is trucked to railroad cars, a loading charge of about $0.50 a ton must be added. These prices vary somewhat according to local conditions. With the advent of the combine harvester some years ago it was found that baling costs in general increased due to the heavy type of pick-up baler then in use and to lack of experience in the best way to conduct the new operations in collecting scattered straw and stubble in the field. To obtain a good yield of straw this stubble had to be mowed.

With the new emphasis placed on the possibility of industrial use of agricultural residues by the establishment of the Northern Regional Research Laboratory, the American Society of Agricultural Engineers, many members of which are engaged in the farm-equipment industry, became greatly interested in the collection problem since it was evident that high collection costs were a bottleneck and new methods of collection and new machines would have to be designed to meet the changing conditions. It became evident that unless some simple, low-cost means were found for the farmer to collect combine straw for use on his own farm, the sale of the small combine would be slowed up. The requirements for farm straw, as will be observed in Table I, are higher than the present commercial outlets for straw. Thus farm use alone justifies production of lightweight baling equipment. At the same time the demand for improved methods in hay making gave an impetus to the development of pick-up balers for this crop. As a result of the three recent symposia held before the American Society of Agricultural Engineers and of cooperative work with farm equipment manufacturers, definite progress in improving collection methods and in lowering collection costs can be reported.

An analysis of the problem indicated that all unnecessary steps in harvesting the grain and in collecting straw must be eliminated and that labor must be reduced to a minimum. Deterioration of baled straw

TABLE VIII.—COST OF BALING COMBINE STRAW WITH PICK-UP BALERS—USING VARIOUS METHODS OF CUTTING AND WINDROWING

Method and Identification	Costs per ton of baling							
	Baler	Tractor	Wire or twine	Labor (baling)	Raking with side delivery rake, man and team	Windrower	Mower	Total
Minnesota Costs [1]								
Average several tests on farms with different outfits and different methods	$ .407	$ .229	$ .401	$ .531	$	$	$	$1.57
LaFayette, Indiana test [2]								
High cutting (12"). 3 swaths raked together with side delivery rake	.351	.163	.490	.466	.713	....	....	2.09
Springfield, Illinois tests [3]								
High cutting (16"). Stubble mowed, windrowed and baled in one operation	.395	.313	.450	.645	....	.008	.186	2.00
Low cutting (6"). Single windrow left by combine without straw spreader	.370	.163	.450	.450	....	....	....	1.43
Low cutting (6"). Double windrow made by windrower attached to combine	.351	.127	.450	.321	....	.001	....	1.25

[1] Baling Straw with the Pick-up Baler. By A. J. Schwantes (University of Minnesota). Paper presented at fall meeting of American Society of Agricultural Engineers. 1941.

[2] Based on data obtained from "Straw Collection after Combining" by I. D. Mayer (Purdue University). Paper presented at fall meeting of American Society of Agricultural Engineers. 1941.

[3] Based on data obtained from "Baling Straw from Windrow Left by Combine" by A. L. Young (University of Illinois). Paper presented at fall meeting of American Society of Agricultural Engineers. 1941.

can be eliminated by keeping it dry. It follows, therefore, that straw baled in the driest condition has the best chance for maintaining quality. Since it is necessary to have the grain dry at the time of combining, straw then is in its driest condition for baling. If some time is allowed to elapse before the stubble is cut, weeds or clover grow in the field and a poor grade of straw is likely to result. Furthermore, in fields where clover follows the grain crop, a better stand and quality of first-cut clover hay is obtained if the stubble is cut as soon as possible after combining.

The following consecutive operations are often used in harvesting grain and collecting straw: (a) combining, leaving a high stubble, (b) cutting the stubble with a power mower, (c) double windrowing of the combine straw and cut stubble, and (d) picking up the windrows with a pick-up baler.

During the past two or three years experimental studies on various combinations of machines to eliminate unnecessary steps in field baling of combine straw have been conducted. Furthermore, there have been new developments in lower-cost, much lighter, pick-up balers. In Table VIII is given a resume of results of such tests, presented at a symposium of the American Society of Agricultural Engineers in December, 1941. Table IX gives the basis of calculation of fixed cost of farm implements used in the tests so that the various cost estimates may be brought into line. Referring to the Springfield test, cited in Table VIII, a low collecting cost of $1.25 per ton of baled straw in which only two operating machines were used, is shown. In this test a small combine harvested the wheat, cut a low stubble of six inches, and formed the straw into double windrows. Following this combine was a pick-up baler to which was attached a small trailer dump cart. Comparing this procedure with the one of four operations described above, it will be seen that the power mower and the windrower,

FIG. 2
Combine, Pickup Baler and Trailer Dump Carts Used in Springfield Tests. Note Short Stubble and Double Windrow

TABLE X.—CHAFF CONTENT OF WHEAT STRAW AS REPORTED FROM VARIOUS SOURCES

Harvesting and collection method used	Description of straw or source of information	Chaff content[1] %
Binder-harvested baled stack straw	European observation	18.0
	Mill "A," Indiana, 1940 (sample representing 24-hour run)—Strawboard Mill analysis	18.6
	Mill "B," Indiana, 1940 (sample representing 24-hour run)—Strawboard Mill analysis	18.3
	Baled in Iowa	17.3
Cut and threshed by hand	Average of 11 varieties (Table II)	19.2
Combine-harvested baled with pick-up baler	Springfield, Ill., straw collection tests:	
	Single windrow operation	2.5
	Double windrow operation	3.5
	Indiana Mill "B" estimate (This mill uses large tonnage of combine straw)	5.0

[1] Material passing through 4 x 4 mesh wire sieve except in the case of the chaff content representing the average of 11 varieties which latter were hand separated.

as well as the cost of operating these machines, were eliminated. (*See* Fig. 2.)

More recent developments in light-weight pick-up balers show even greater promise of lower costs.

In describing a new pick-up baler which has gone through the engineering-development stage, Silver *(3)* states that with this machine, "The windrow is now to be rolled up, similar to the rolling up of a carpet, tied with twine when a 70-pound roll is secured and dropped at the rear of the machine either on to the ground or on to a wagon. This is a new principle fully automatic and is a good example of correct placement of the functional units . . . " The bales made by it are compact and would appear to lead to an improvement in compactness of piles, in ease of transportation, and in ability to shed water and thus withstand weathering. The baler is operated by one man and can be used as a stationary, as well as a pick-up, baler. Considering that these developments in machines have taken place in less than five years, it can confidently be expected that it will be possible to lower baling costs of straw in the near future to $1.50 or less per ton, including profit to the custom baler, as compared to the present average cost of $2.50 per ton, thus making possible a saving of at least $1.00 per ton in baling costs.

CHAFF CONTENT AND COSTS

It is generally agreed that chaff, heads, and leaf blades are of the least value in preparing pulp, not only because of high ash content and high solubilities, but also because the fibers in these parts of the plant are short. Many paperboard mill operators agree that these parts of the straw act mainly to use up chemicals and in considerable part appear in the mill effluent and thus contribute to stream pollution, an important problem to the mills. Some mills do not consider chaff to be a loss because of save-all systems. However, in the manufacture of fine papers from straw these parts would be a real liability.

No reliable information seemed available in the industry concerning the chaff content of baled farm-stack straw. Two large operators undertook analyses to determine chaff content and both found it to be

TABLE IX.—BASIS FOR CALCULATION OF FIXED COSTS ON FARM IMPLEMENTS USED IN TESTS[1]

Equipment used	Estimated use per year	Yearly depreciation	Yearly interest on investment	Yearly repairs	Yearly insurance, taxes, shelter
Baler	500 tons per year	10% of cost	5% of ½ cost	2% of cost	$10.00
Tractor	600 hours per year	10% of cost	5% of ½ cost	2½% of cost	$10.00
Mower	100 hours per year	10% of cost	5% of ½ cost	5% of cost	$1.50
Rake	100 hours per year	10% of cost	5% of ½ cost	5% of cost	$1.50

[1] Based on data obtained from "Baling Straw from Windrow Left by Combine," by A. L. Young (University of Illinois). Paper presented at fall meeting of American Society of Agricultural Engineers. 1941.

approximately 18%. The combine method of harvesting makes possible a low chaff content of straw and this low content can be further reduced by the use of an inexpensive attachment to the combine.

In Table X, data on the chaff content of commercial farm-stack and combine baled straw are given. These data show a reduction of chaff in combine straw as compared to stack straw amounting to 14% of the straw. Thus, when farm-stack straw costs $6.00 per ton, its chaff content represents about $1.00. If to this $1.00 cost is added operating overhead, costs of chemicals and steam for cooking, pumping, and processing charges for the fine fibers which leave the mill in the white water, probably another $1.00 or more of cost is involved. It is evident, therefore, that the use of combine straw, clean and low in chaff content, can bring to the mill considerably more than $1.00 a ton saving as compared to stack straw. Furthermore, the chaff, because of its fine condition and its higher nitrogen content, has more value to the farmer as a fertilizer than the other parts of combine straw and should probably go back to the land.

Increased Profit to Mill and to Farmer

Let us see how the improvements in straw quality and collection discussed can at the same time improve the economic condition of the farmer and the mill. Low-chaff content, combine straw has $1.00 per ton more fiber value than farm-stack straw, assuming a $6.00 per ton delivered price for straw.

If farmers within an average $1.50 per ton hauling radius (in preference to those supplying stack straw from the present average $2.50 radius) were paid $1.00 more for unbaled combine straw or stubble, then the delivered price to the mill would still be $6.00 per ton since the extra $1.00 paid the farmer is saved in hauling charges, which are a part of the f.o.b. price. Thus the farmer and the mill would each receive $1.00 per ton more from the increased value of combine straw. The farmer would probably not deliver less straw per acre than would be obtained from stack straw, taking into account actual losses in storing and baling stack straw. The mill would profit even more than the farmer due to lowered operating costs and improved yields with combine straw. This still leaves $1.00 per ton which may be saved in lowered baling costs. By a community of interest this saving, let us say, might be split between the mill and the farmer. Table XI shows how this works out.

TABLE XI.—COST COMPARISONS PER TON F.O.B. MILL FOR STRAW CONTAINING REGULAR CHAFF (FARM-STACK) VS. STRAW CONTAINING LOW CHAFF (COMBINE) AND BENEFITS TO FARMER AND MILL

	Farm-Stack Straw				
Items of cost	Regular content of chaff	Calculated to low chaff combine basis	Combine straw, low chaff content in $1.50 radius	Benefits	
Straw	$1.00	$1.16	$2.50	To farmer	$1.50
Baling	2.50	2.92	1.50		
Hauling	2.50	2.92	1.50		
Cost to mill	$6.00	$7.00	$5.50	To mill	$1.50

Acknowledgment

The authors desire to acknowledge the assistance of the Analytical and Physical Chemical Division of the Northern Regional Research Laboratory for the chemical analyses reported and of R. B. Gray, Chief, Division of Farm Mechanical Equipment Research of the Bureau of Agricultural Chemistry and Engineering, in arranging field experimental work and for many helpful suggestions.

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Water Treatment Developments*

By William R. Gibson[1]

Abstract

A general discussion of the various forms of water treatment available is given, particularly the latest developments, dealing first with the standard treatments, then pointing out the more important improvements and modifications which have been made in recent years, and finally dealing with the improvement of water from the point of view of the pulp and paper manufacturer, by the addition of wetting agents, dispersives, and other chemicals.

Introduction

Perhaps water conditioning would be a better word to use to describe what is really required in preparing water for pulp, paper, and paperboard mill use, because water offers so many varieties of impurities. Water is really a highly complex material, which may require one or more of many varieties of treatment to make it satisfactory for process use. Some of the objects desired are as follows:

A. Removal of suspended matter
B. Reduction or removal of color
C. Reduction or removal of dissolved solids and the selective reduction or removal of dissolved solids
D. Sterilization
E. The addition of qualities not present in natural water supply, which have been made possible by the development of many wetting agents, dispersives, etc.

There is no industry in which the quality and quantity of water required bulks quite so largely as in the manufacture of pulp, paper, and paperboard. Two examples of the relatively large demands of the mills can be found on the Pacific coast. One is the city of Everett, with a population of some 30,000, which uses an average of 9 m.g.d. for domestic and ordinary use and 65 m.g.d. in its pulp and paper mills. The water as it comes from the storage reservoir, goes straight to the mains, without treatment, for domestic use, but the same water is not good enough for the pulp mills, each of which has its own purification plant. The other example is the city of Port Angeles, with a population of only 10,000, using about 4 m.g.d. for domestic and ordinary industrial uses, while the pulp and paper mills in Port Angeles use about 50 m.g.d. The water is treated in water purification plants for industrial use, although the city water is untreated.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 16-19, 1942.

[1] Member TAPPI; Manager, Northwest Filter Co., Seattle, Wash.

Removal of Suspended Matter

Suspended matter has usually been removed by means of slow settling or by filtration through rapid sand filters. In some cases satisfactory water can be obtained by straight filtration without coagulants, but more usually coagulation by means of chemical treatment has been resorted to, with a settling tank preceding the filters to remove the bulk of the solids by settling. An increasing range of coagulants is available in addition to the widely used filter alum, including ferrous sulphate, ferric chloride, sodium aluminate, chlorinated copperas, and ferric sulphate. Clay and other filter aids may be used to some extent.

Reduction or Removal of Color

Treatment for color removal is accomplished by flocculation with coagulants, the coagulated material adsorbing the color which is then settled and filtered out as in the case of suspended matter. In many cases waters which are high in color may be low in total solids and may require the addition of considerable chemicals to provide sufficient floc to adsorb the necessary amount of color from the water. Color is mainly due to the presence of organic matter in the water, but may be caused, or increased by the presence of iron, manganese or copper, or combinations of these metals.

Reduction or Removal of Dissolved Solids

The lime-soda softener is the most common example of means to reduce dissolved solids and is most often used with waters comparatively high in calcium carbonate and in which the addition of lime or lime and soda ash is necessary for the precipitation of substantial amounts of calcium and magnesium.

An example of selective reduction of dissolved solids would be the lime-soda softener equipment when used for the reduction of silica, or some form of zeolite softener where the reduction of dissolved solids can be carried almost to complete elimination by successive treatments, with the one exception, that silica is not reduced.

Sterilization

The commonest form of sterilization is by means of chlorination. The growth of slime bacteria is reduced in piping and equipment. Other forms of bactericides are used for the control of slime conditions.

The standard filter plant consists in general of a mixing basin, which may or may not have mechanical agitation and may have a flocculation chamber. The purpose of the mixing chamber is to get mixing, or rather diffusion, as rapidly as possible, of the chemicals applied to the water being treated. The flocculation chamber is for the purpose of giving the pinpoint particles formed in the mixing chamber as many opportunities as possible to build up and agglomerate into the larger sized particles possible. After the desired degree of mixing and flocculation has been accomplished, the water is allowed to flow through a settling basin. It is important that the path of the water through the settling basin should be at a uniform rate and with as little disturbance, either horizontally or vertically, as possible. The object is to allow the larger floc particles to settle out to the maximum possible extent, leaving all the lighter and smaller particles to be removed by the filters.

The standard settling time for municipal plants has been as high as four to six hours. In industrial plants it probably ranges from one to four hours, the object being to get the floc into the largest possible particles, since in general the larger they are, the more quickly they will settle.

The clarified water from the settling basin passes over a weir, which should have the lip as level as may be possible in order to have a uniform flow rate over the whole width of the basin, and then passes through the filters, where such floc as remains is filtered out on the sand bed.

The improvements which have taken place in the processing of water for filtration have consisted mainly of better devices for diffusing the chemical or chemicals through the incoming raw water, and improved methods of providing controlled agitation in the water in which the pin-point floc has begun to form. These devices in the beginning consisted of simple agitators. Later the elbow mixing device was applied to improve flocculation, and had considerable success within its field. It was then superseded by mechanical flocculators of various kinds which showed substantial improvement over any static device available. The advantage gained by the mechanical flocculator is to increase positively the mixing of the water to multiply the opportunities for the floc particles to build up.

A new viewpoint has been taken regarding this question of flocculation, and the idea of recirculating previously formed sludge has been applied, with a view to improving the flocculation, reducing settling time, and getting higher efficiency from the chemicals fed. Several processes of this kind are on the market.

In one of these processes, which combines all the functions of mixing, coagulating and settling, including automatic removal of excess sludge, consists in general of a circular tank with a central draft tube and two agitators. A bed of slurry is kept in continual motion in the lower part of the tank. The chemicals are applied directly to the circulating slurry. This slurry is kept moving at high velocity up through the draft tube and down through an annular ring, back to the bottom, the rate of circulation being about five times the through-put rate of the water being treated.

The device may be used for several purposes, precipitation or clarification of fresh water, precipitation or clarification of mill effluent, lime-soda softening, which in fact it was first designed for, and for the separation and recovery of suspended solids in water where solids have been found to justify the cost of recovery.

The greatest problem in the northwest is probably the removal of color from waters so extremely soft that there are no bases for the formation of aluminum hydroxide, and practically all the required chemical has to be added to the water to adsorb the color. Occasional experiences are had with high iron contents or manganese (usually not in large amounts), and one unusual case was where both iron and copper were present in the water, causing a most unusual color condition and one quite difficult to treat.

Rainfall is heavy on the west coast, and one of the problems of many of the water purification plants is caused when the occasional winter snowfall coincides with the Chinook or warm wind, accompanied by heavy rain, when snow melts at a rapid rate at the

same time that rain is falling, and the flow in some of the streams becomes out of all proportion to the normal. In one such case the river completely changed its course, and in the new bed, passed through a bed of volcanic silt very finely divided, with the result that the water which flowed to the pulp mill in question was almost in the form of mud. The actual solids were measured at between 6000 and 7000 p.p.m., and this at a time after the peak of the mud flow had been passed. As a result the mill had to shut down for several days.

Sulphonated Alcohols

Another unusual case occurred when heavy summer rains, washing out pools in the woods, apparently washed the larvae of some fly into the stream. These were small enough to pass through the screens onto the filters and in some cases passed through the filters. The filters became infested with the larvae. Active sterilization of the filter beds was necessary to destroy the larvae before filter operations could be resumed.

Chemicals, particularly the wetting agents (mostly sulphonated alcohols) have been used for various purposes, as in felt washing, in the beaters, and in other places throughout the mill, and dispersives of various kinds. These chemicals form an interesting addition to the possibilities of water treatment.

Sodium Hexametaphosphate

Sodium hexametaphosphate has possibilities which distinguish it from other commercial products.

You are probably all familiar with the wetting agents and their action in reducing surface tension of water in such a way that permeation of the fibers is obtained much more rapidly, and this property has been used in various ways in the pulp mill. We propose to describe at some length the material known as sodium hexametaphosphate which has rather unusual properties.

Sodium hexametaphosphate is a complex phosphate glass produced by a thermal process from soda ash and food-grade phosphoric acid.

Fundamental Properties

The fundamental properties of this glassy phosphate are:

(1) It sequesters many metallic ions in the form of soluble complexes.
(2) It exhibits a pronounced dispersive action upon finely divided metal oxides and salts.
(3) It inhibits the crystallization of many slightly soluble salts, stabilizing a condition of supersaturation.
(4) It is distinguished from the orthophosphates and pyrophosphates by its ability to coagulate albumen.
(5) Essentially neutral when first dissolved, it reverts slowly to orthophosphate with a decrease in pH value.

Its commercial uses, dependent on these properties, are extremely broad in scope but this discussion concerns uses in paper processes.

The chemical compound exhibits a pronounced dispersive action upon finely divided metal oxides and salts. This property immediately brings to mind the pigments used in paper coating. An investigation was made as to how this compound could be used to advantage in the paper coating process where large quantities of pigments are applied to the surface of a paper sheet in connection with some adhesive such as starch or casein. The initial work was largely confined to starch adhesives, as it was believed that this adhesive would find greatest use in the paper machine coating processes.The laboratory procedures used were carried out according to TAPPI standards. The Bird film applicator was used to coat the paper giving film thickness of 0.0005 and 0.0015 inch.

The results of this study show that sodium hexametaphosphate has a decided effect on the viscosity of the coating mixes and improves the spreading qualities of the coating. The physical properties of the coated paper were changed very little with the exception of the Dennison wax test which indicated that the adhesive strength of the coating was improved.

Physical Tests

Physical tests were made on the coated paper according to TAPPI standards. Different types of clays, pigments, and coating starches were used in these experiments. Table I shows a few average examples of the effect the of compound on the physical properties of coated papers.

TABLE I.

	Film Thickness, inch	Sodium hexametaphosphate on Total Solids, %	Solids (clay), %	Adhesive (Starch), %	Brightness	Opacity	Dennison Wax Number
(1)	.0005	..	50	15	75	96	4
	.0015	..	50	15	76	97	5
	.0005	0.2	50	15	76	96	6
	.0015	0.2	50	15	77	96	7
(2)	.0005	..	35	20	76	94	6
	.0015	..	35	20	76	96	7
	.0005	0.2	35	20	75	94	7
	.0015	0.2	35	20	75	95	9
(3)	.0005	..	45	15	76	93	3
	.0015	..	45	15	77	96	4
	.0005	0.2	45	15	77	94	4
	.0015	0.2	45	15	78	96	5

The dispersing effect of the compound on clay, titanium oxide, and calcium carbonate is made use of in a number of the coating processes in paper manufacture. The amount of sodium hexametaphosphate required depends on the pigment and type of adhesive used but generally varies from 0.1 to 1.0% on the total weight of solids. It can be used in coatings containing casein as the adhesive, particularly to improve the spreading properties of the coating mix.

Sodium hexametaphosphate sequesters many metallic ions in the form of soluble complexes. This property of the compound is made use of in all washing or scouring operations such as in the laundry or textile field where lime soap deposits are so detrimental to clean clothes. When soap is added to hard water, the hardness forming salts in the water, calcium and magnesium, precipitate the soap-forming insoluble lime soaps as curds or film. If the compound is added to the water, it immediately sequesters the hardness-forming salts in the water into a complex salt, so that when soap is added, there will be no evidence of precipitants and the solution will be clear, with a maximum sudsing effect. This, however, is not a problem in the paper industry, other than in the washing of felts.

A Formula for Working Felts

A formula has been developed at one of the leading paper colleges which has found wide use in washing felts. This formula consists of sodium hexametaphosphate, sodium metasilicate, and a sulphated fatty alcohol.

In felt washing it is necessary to rapidly and thoroughly impregnate the felt with a detergent solution which will free the loading material and rinse freely in the final rinsing process. When felts are washed on the machine, the felt is saturated with a spray from the perforated pipe across the width of the felt.

A 1% solution is made up in a tank overhead, with the felt washing compound.

The temperature of solution should be between 100 and 120 deg. F. This solution is sprayed on the felt and the felt is run with this solution for 20 minutes. Then the showers are turned on, and the rinse is for 20-30 minutes.

This washing formula puts the felt in a soft and uniformly absorbent condition. It does not have the drawback that a soap compound has, of forming lime soaps, but improves the porosity of the felt. The fibers are kept soft and resilient and a maximum felt life is assured.

Threshold Treatment

We have a third property of sodium hexametaphosphate dealing more with water treatment: this is the property of inhibiting the crystallization of many slightly soluble salts, stabilizing a condition of supersaturation. We commonly refer to this treatment as "threshold treatment". By adding the compound on the order of 1 to 2 p.p.m. to a high bicarbonate water, the deposition of calcium carbonate scale on heating or addition of alkali is inhibited even in waters containing as much as 30-40 grains of hardness. The threshold treatment, with somewhat higher concentrations up to 10 p.p.m. will inhibit the corrosion of iron pipelines from soft waters. The growth of calcium carbonate crystals from a high bicarbonate solution apparently is inhibited with this compound, by isolating crystal nuclei as rapidly as they form. The formation of a protective film over iron pipelines seems to be responsible for the ability of the compound to inhibit corrosion.

Threshold treatment of water inhibits scale formations in pulp washers, pipelines, vacuum pumps, condensers, heaters, etc. Bleach tanks can be kept more free of scale with the addition of 4-6 ounces of the compound to a 10,000-gallon tank. Alkaline pulp from the caustic extraction coming in contact with a high bicarbonate wash water will deposit scale on the washers. The addition of the compound to the wash water to the extent of a 4 p.p.m. will inhibit this scale deposition.

Threshold treatment in controlling corrosion is clearly brought out by an experience with a zeolite water in a large mill in Pennsylvania. This water was used for wool dyeing, scouring, and bleaching. The pH of the water varied from 6.6 to 8.1 through the seasons of the year, and the hardness varied from 68 to 140 p.p.m. This hardness, however, was reduced to 10 p.p.m. as calcium carbonate through a zeolite softening unit.

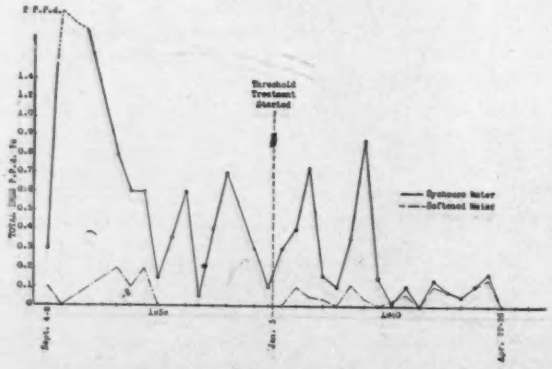

Fig. 1
Results of Threshold Treatment

As is natural with any soft water there was a decided increase in iron content of the water as it passed from the soft water storage tank to the dyehouse. The dyeing processes provided very sensitive indicators for this iron contamination, because many dyestuffs are affected by even a trace of iron in the water and thus are thrown off shade. Much difficulty was experienced in the dyehouse and it was decided to try to eliminate this trouble.

In September, 1939 a rigorous testing schedule was established at the plant. Samples of softened water and dye house water were taken every morning and 100 cc. of each retained to be mixed into a weekly composite. The two composite samples were analyzed to determine the amount of iron picked up in the distribution system.

On January 3, 1940, a feed of 8 p.p.m. of sodium hexametaphosphate into the soft water storage tank discharge was started. This was reduced to 6 p.p.m. on January 26 and again to 4 p.p.m. on February 14, then to 2 p.p.m. on May 1. The results of this treatment can be realized from the iron concentrations shown in Fig. 1 for the period before and after the use of the compound.

The improvement in conditions is evident from the fact that the pick up in iron concentration of the water in passing from the storage tank to the dyehouse has decreased to a negligible amount and the dyehouse has had no trouble with off shades from iron.

In the washing of sulphate pulp after digestion, it is necessary to add more than 2 p.p.m. of sodium hexametaphosphate because of the pulp and large amounts of impurities present. When washing pulp with a dilute black liquor wash followed by two hot clear water rinses, the pulp has a certain bleachability. If the compound is added to each of the hot clear rinses, 0.05% based on the weight of wood, the chlorine demand is reduced as much as 15 to 25%.

Pulp in Experimental Work

In experimental work the pulp was prepared under the following conditions:

Dry Wood Used	3000 grams
Active Chemical as Na_2O	20%
Sulphidity	33.3%
Liquor Ratio	5:1
Cooking Schedule	1.5 hr. to reach a max. temp. of 170 deg. C. and 3 hours at this temp.

Results of Washing and Bleaching

The results of washing and bleaching these cooks are given as follows:

	% Sodium Hexametaphosphate Based on Dry Wt. of Wood	Bleachability Test Chlorine Consumed	Actual Chlorine Consumption in 3-Stage Bleach	Brightness
(1)	...	12.0%	5.88%	80
	0.1%	9.2%	4.41%	80
(2)	0.1%	8.5%	4.65%	80
(3)	0.05%	9.0%	4.83%	80
(4)	0.02%	9.5%	4.74%	80

When the compound is used in the wash, it is assumed that it inhibits the precipitation of the coloring matter in the sulphate pulp so that it is more readily washed out. Pulps of higher brightness are produced with a reduction in the amount of chlorine required. Strength values of the pulp show a small but definite improvement.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

Importers may have their shipments listed in these columns by submitting records of importers to this publication.

NEW YORK IMPORTS

WEEK ENDING MAY 9, 1942

SUMMARY

Newsprint ..... 2,663 rolls

NEWSPRINT

——, ——, ——, 1,529 rolls.
——, ——, ——, 329 rolls.
——, ——, ——, 392 rolls.
——, ——, ——, 413 rolls.

CASEIN

Manufacturers Trust Co., ——, ——, 500 bags (rennet), 25,000 kilos.

BONES

Armour & Co., ——, ——, 1,813 bags.
——, ——, ——, 9,050 bags.

SPLITS

H. Remis & Co., ——, ——, 77 bls.

Walter Geist Head Allis-Chalmers

Max W. Babb, Board Chairman of the Allis-Chalmers Manufacturing Company, has announced that Walter Geist had been elected president of the mammoth company at a meeting of the Board of Directors held in Milwaukee on May 7. In this capacity Mr. Geist will replace W. C. Buchanan, whose resignation was forced by ill-health a few weeks ago.

Thus, a man who entered the company's employ as an errand boy in 1909, now at only 48 years of age, takes over control of this company which produces a greater diversity of capital goods than any other company in the world.

The importance of the Texrope Drive, which was developed by Mr. Geist, to American industry was recognized in 1940, when a committee of distinguished scientists, headed by Dr. Karl T. Compton, president of the Massachusetts Institute of Technology, awarded Mr. Geist the coveted honor of the "Plaque of a Modern Pioneer" for his research and original work in the power transmission field.

In April of this year, he was made executive vice-president by the board of directors, and, one month later, has been made president.

In July of last year, Mr. Geist was appointed to the committee on economical policy of the National Association of Manufacturers, and also to the resolutions committee.

Move New York Offices

The Montmorency Paper Company, Ltd., Quebec, P. Q., announces the removal of its New York offices from 10 East 43rd street to 400 Madison avenue, effective May 4. The telephone number is Plaza 3-4280.

Byron Weston Co. Changes

The directors of the Byron Weston Company, Dalton, Mass., announce the election of Hale Holden, Jr., as president. Mr. Holden is a grandson of Byron Weston and has been associated with the company for several years as a director.

He attended Yale University and after graduation in 1922 became associated with the Pullman Company in the manufacturing department at Chicago as draftsman, subsequently rising to the position of vice president. For the past eleven years, he has been in charge of the eastern operations of that company, with offices in New York and Philadelphia.

At the same time, announcement is also made of the election of Robert Crane as vice president, and the appointment of Harry Birt as sales manager. Mr. Crane, who will continue to hold the offices of secretary and director, has been responsible for the company's progressive and successful sales policy during the past two years.

John H. Bellows continues to hold the offices of vice president, treasurer and director.

Mr. Birt has been associated with the Byron Weston Company for seventeen years, a large part of which he has spent in the Middle West as manager of sales in that territory, with offices in Chicago. He now assumes the broader responsibilities of general sales manager.

R. E. To Head Sutherland Division

KALAMAZOO, Mich., May 11, 1942—Richard E. Lane, superintendent of the Eddy Paper Company box plant at Three Rivers, will become superintendent of the Sutherland Paper Company specialties division about June 1, Glen E. Graham, Sutherland production vice president announced last week.

Mr. Lane will fill the vacancy created several weeks ago by the death of Walter B. Hadley, who had been superintendent of the specialties division several years.

Mr. Graham said Mr. Lane had been in the paper manufacturing business about 15 years, and was for five years manager of the Continental Container Corporation's Boston division before becoming superintendent of the Eddy box plant in 1933.

Otis Cox, Eddy general manager, announced in Three Rivers that Mr. Lane would be succeeded there by George Radke, with the corporation 10 years.

In Three Rivers, Mr. Lane has been active in church and Boy Scout work.

Cancel Spring Meeting

The Maine-New Hampshire group of the Technical Association of the Pulp and Paper Industry has decided to cancel its Spring meeting in Portland, Me., scheduled for May 22 and 23, 1942, due to the present war time difficulties in transportation.

New York Paper and Pulp Market Review

Paper Production Shows Downward Trend As Civilian Demand Slowly Declines—Demand For Good Grades of Wood Pulp Heavy —All Papermaking Materials Now Under OPA Price Regulation.

Office of the PAPER TRADE JOURNAL,
Wednesday, May 13, 1942.

The expected continuation of a trend to a lower civilian demand for many grades of paper, is indicated in some of the reports from many manufacturers' representatives, jobbers, and general paper merchants during the current week. The OPA meetings called with the different branches of the trade will be concluded this week. These meetings have accomplished much to inform paper merchants of the vital importance and scope of the government's effort to adopt measures to prevent serious inflation through a rapid rise in prices. The General Maximum Price Regulation, and supplementary Maximum Price Regulation No. 129, on paper and paper products should be carefully read by all business men. Booklet No. 1 issued by the Office of Price Administration, Washington, D. C., clearly and thoroughly discusses the subject.

The index of general business activity for the week ended May 2, rose to 133.1%, from 132.9% for the preceding week, compared with 123.7% for the corresponding week last year. Paper board production declined 2.6%.

Paper production for the week ended May 2 was estimated at 99.2%, compared with 99.8% for 1941, with 89.3% for 1940, with 79.4% for 1939, and with 67.1% for the corresponding week for 1938.

Paper board production for the week ended May 2 was 92.0%, compared with 83.0% for 1941, with 77.0% for 1940, with 68.0% for 1939, and with 57.0% for the corresponding week for 1938.

The decline in orders for paper during the first quarter of this year, is expected to continue until the adjustment of production and demand is completed. At this date the production and demand situation for the whole current year appears that operations in 1942 may approximate the high record level established last year. The capacity of the industry is estimated to be equal to any demands likely to occur in the remaining months of the current year. No paper shortage is foreseen.

Maximum paper prices were stabilized May 11 by the OPA General Maximum Price Regulation and supplementary Maximum Price Regulation No. 129, on paper, paper products and raw materials for paper and paper products. Manufacturers' delivered prices for car lots for kraft wrapping and kraft bag paper are as follows: standard kraft wrapping, 4.75; imitation kraft wrapping, 4.75; No. 1 kraft, 5.00; and standard kraft bag paper, 4.375 per cwt. Lower prices may, of course, be asked, but no person is permitted under the law to charge more than the above maximum prices.

On single weight crepe paper, 9x20, bulk form, a maximum delivered price of 5.25 per gross, in 100 gross lots or more, is set by the OPA.

Maximum retail prices, with some exceptions, are scheduled to become effective May 18. Prices must not exceed the highest levels which each individual seller charged during March, 1942.

Wood Pulp

Demand for all the good grades of chemical wood pulp is reported very heavy, with prime grades continuing scarce. Supplies of all the lower grades are ample for all requirements. With the WPB allocation plan in effect, and with OPA maximum prices as potent stabilizing factors, no serious shortage or change in prices are expected in the trade.

Rags

OPA maximum prices are now in effect on papermaking rags and materials on the basis of the highest prices prevailing in March, 1942. Demand is reported good for many grades of cotton rags at this date, with the roofing grades steady.

Old Rope and Bagging

A steady demand for old Manila rope is reported at OPA prices. Other grades are in moderate to good demand.

Trading in scrap bagging is less active at this date. Mill demand is good under the influence of more limited supplies of paper mill grades.

Old Waste Paper

The lower grades of waste paper are softer this week under the influence of relatively large supplies and little increase in mill buying. Less than maximum prices are reported in several quarters. No important change is reported in the market situation in the higher grades of paper stock, which is moving steady in good volume at OPA prices.

Twine

Domestic manufacturers are reported to have discontinued the production of Manila twine by order of the War Production Board. Twine prices are relatively firm in both hard and soft fiber grades.

Finch, Pruyn & Co. Grant Increase

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., May 11, 1942—Announcement is made here that the several hundred employees of Finch, Pruyn & Co. are to receive a wage increase of four cents an hour, effective next week. Six labor unions and the management were represented at a conference held last week at which the agreement was reached. Labor officials consider the increase good in view of the fact that the government has frozen the price of newsprint at $50 a ton and any wage increase or other additional costs must be absorbed by the manufacturer. H. W. Sullivan, of Worcester, Mass., first vice president of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, represented that body at the conference in the absence of John P. Burke, of Fort Edward, the president. Among other union representatives at the meeting was John Coonley, of Troy, from the International Association of Machinists.

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UNITANE O—110 was especially developed for paper pigmentation. Its excellent dispersion in water promotes good retention and excellent sheet formation. As a component of the beater furnish, it produces *whiter* sheets of *great brilliance*, and superior printing qualities.

SAMPLES of UNITANE O-110 will be sent promptly upon request.

UNITED COLOR & PIGMENT

UNITED COLOR AND PIGMENT CO.
DIVISION OF INTERCHEMICAL CORPORATION
NEWARK, NEW JERSEY
SALES OFFICES IN PRINCIPAL CITIES

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL
Wednesday, May 13, 1942.

BLANC FIXE—Prices on blanc fixe are firm and unchanged and conform to prevailing market levels. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton, f.o.b., works. Demand reported good for the week.

BLEACHING POWDER—Quotations on bleaching powder are firm. Demand reported good for the week. Bleaching powder is currently quoted at $2.25 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are unchanged for the current week. Standard domestic casein, 20-30 mesh, is currently quoted at 21 cents per pound; 80-100 mesh, at 21½ cents per pound. All prices in bags, car lots. Argentina casein, 20-30 mesh, is currently offered at 16½ cents per pound, c.i.f. No quotations on French casein.

CAUSTIC SODA—Quotations on caustic soda are firm and continue unchanged at prevailing market prices. Demand reported good. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, car lots, at works.

CHINA CLAY—Prices on china clay are firm and conform to prevailing market levels. Demand reported moderate at this date. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is currently offered at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine are firm and unchanged. Government and industrial demand is reported very heavy during the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported firm for the week with prices lower on some grades. "G" gum rosin is currently quoted at $2.85 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $2.75 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $3.24 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand good for the current week. Domestic salt cake is currently quoted at $15 per ton, in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16 per ton imported salt cake is nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market levels. Demand reported good for the week. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and are reported unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina. Demand reported moderate for the current week. The commercial grades are currently quoted at from $1.15 to $1.25; iron free at from $1.75 to $1.85 per 100 pounds. All prices in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and conform to prevailing market levels. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mines. No quotations on imported talc.

MARKET QUOTATIONS

All market quotations, excepting those already designed as official OPA maximum prices, are nominal and subject to adjustment to the price levels required by the Office of Price Administration to meet the requirements of the law as proclaimed in the General Maximum Price Regulation, and supplementary Maximum Price Regulations Nos. 129 and 130 on paper and materials, which became effective May 11, 1942, and such subsequent supplements as may be issued by the OPA.

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	$8.00	"	—
Kraft—per cwt.—Delivered Zone 4			
Northern, Extra Quality	$6.00	@	$7.00
Superstandard	5.25	"	6.25
Northern Standard Wrapping	4.75	"	5.25
Standard Wrapping	4.75	"	—
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.05	"	—
White No. 1½	1.00	"	—
White No. 2	1.00	"	—
Anti-Tarnish M. G.	.95	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case			
Unbleached, Jr.	2.35	"	—
Bleached, Jr.	2.65	"	—
Manila—per cwt.—C. l. l. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*48.00	@	—
Chip	*45.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*60.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers
100% Rag Ext. No. 1	$40.25 @ $47.25		$41.40 @ $48.50
100% Rag	32.20 " 37.75		33.35 " 39.25
85% Rag	.... "		32.20 " 37.75
75% Rag	24.75 " 29.00		25.90 " 30.50
65% Rag	.... "		22.80 " 27.75
50% Rag	18.70 " 22.75		19.90 " 24.25
25% Rag	16.40 " 30.00		17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers
No. 1	$10.55 @ $12.75		$11.70 @ $14.25
No. 2	9.65 " 11.75		10.80 " 13.25
No. 3	9.20 " 11.25		10.35 " 12.50
No. 4	8.90 " 10.75		10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$15.50
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	13.25
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. & S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. & S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $ 50 cwt extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight to Destination.

Bl. Softwood Sulphite	$76.00
Unbl. Softwood Sulphite	64.00 @ 66.00
Bl. Hardwood Sulphite	73.50
Unbl. Hardwood Sulphite	63.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi-Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	66.00
Unbl. Soda	62.00
Groundwood	46.00

Transportation Allowances Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum price.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	8.00	@	8.25
Silesias No. 1	4.50	"	4.75
New Unbleached	8.00	"	8.25
Blue Overall	5.75	"	6.00
Fancy	3.00	"	3.25
Washables	2.50	"	2.75
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cuttings	3.00	"	3.15

HIGHEST QUALITY CLAYS

LUMP and POWDERED } IMPORTED — DOMESTIC { CRUDE CRUSHED, AIR FLOATED, WATER WASHED

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Sonoco PAPER MILL CORES

For all uses that require an extremely tough, strong, durable product, SONOCO has developed the new RHINO non-returnable paper mill core. Exhaustive tests for breaking and crushing strength and all around toughness indicate its superior qualities.

Returnable Cores

Equipped With

BERMICO Metal Ends

DURO is a standard core of plus-standard quality. Made from our own especially manufactured paper stock. DURO cores are made standard 3½" I. D. These cores are equipped with BERMICO open or closed notch, metal ends to fit 3" shaft. TAYLOR Ends that protect inside of core only, can also be specified.

EN-DURO a super-quality core to meet extra demands for strength and service where needed. This is our highest grade core. All cores will take either BERMICO or TAYLOR Ends which can be furnished lacquered in various colors for easy identification... Both DURO and EN-DURO cores have a thick kraft surface cover.

SONOCO MAKES *EVERYTHING* IN *PAPER CARRIERS*

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SHIPPING POINTS: LOWELL, MASS. HARTSVILLE, S. C.

DEPENDABLE SOURCE OF SUPPLY

Exclusive distributors

BERMICO (Reg. Trade Mark) ENDS *and* BERMICO (Reg. Trade Mark) FIBRE CORES

Strong cellulose fibers are formed into a homogeneous tube and then especially treated to resist all weather and moisture changes. The Bermico Core is light in weight and extremely hard, strong, rugged. These particular cores have exceptionally long life in either remountable or mill roll service.

J. Andersen & Co.

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CHEMICAL & MECHANICAL PULP

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Söderhamn, Sweden
CELLULOSEFABRIKS A.-G.
Bratislava, Czecho-Slovakia
SVANÖ AKTIEBOLAG
Svanö, Sweden

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
* Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	4.25	@	4.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	@	4.25
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	4.75
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	4.25	"	4.75
Sisal Strings	3.25	"	3.75
Mixed Strings	1.10	"	1.20

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Mixed Books	1.07½	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	1.75	"	—
Old Corrugated Containers	1.00	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1	.07¼	@	.07½
New White No. 2	.04½	"	.05
Light Silesias	.04½	"	.04¾
Silesias, No. 1	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached	.07¼	"	.07½
Washable Prints	.03¾	"	.03½
Washable No. 1	.02	"	.02¼
Blue Overall	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales	.03¾	"	.03½
New Black Soft	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.	.03	"	.03¼
No. 2 Mixed	.02¾	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas	.04¾	"	.05¼
New Black Mixed	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Sisal Rope	3.75	"	—
Mixed Rope	.75	"	1.00
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old Corrugated Containers	1.00	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.75	@	5.00
Sisal Rope	5.00	"	5.25
Mixed Rope	1.25	"	1.40
Transmission Rope—			
Foreign	(nominal)		
Domestic	4.00	"	4.25
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.50	"	6.00
Jute Carpet Threads	3.25	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	4.50	"	—
Scrap Sisal	4.75	"	5.00
Scrap Sisal for Shredding	5.50	"	5.75
Wool Tares—			
Foreign	(nominal)		
Domestic	5.00	"	5.75
Aust. Wool Pouches	5.75	"	6.00
New Burlap Cuttings	5.50	"	5.75
Heavy Baling Bagging	5.50	"	5.75

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.05
New White No. 1	.08	"	.08¼
New Light Flannelettes	.06	"	.06¼
Canton Flannel, Bleached	.08¼	"	.08½
Underwear Cutters, Bleached	.08	"	.08¼
Underwear Cutters, Unbleached	6.50	"	6.75
Silesias No. 1	.06	"	.06¼
New Black Silesias	.03¼	"	.04
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.08¼	"	.08½
Blue Cheviots	.04¼	"	.05
Fancy	.02¾	"	—
Washable	01¾	"	—
Cottons According to Grades—			
Blue Overalls	—	"	.05½
New Black, Soft	.03¾	"	.04
Khaki Cuttings	.04¼	"	.04¾
O. D. Khaki	.04½	"	.04¾
Corduroy	.02	"	.02¼
New Canvas	.06	"	.06½
B. V. D. Cuttings	.07¾	"	.08

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—*
No. 2	1.45	"	—*
No. 3	1.35	"	—*
No. 4	1.35	"	—*
No. 5, Quality A	1.35	"	—*
Quality B	1.20	"	—*
Quality C	.95	"	—*
* Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.50	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 2 Roofing Rags	1.45	"	—